INTERIM REMEDIAL MEASURES
WORK PLAN ADDENDUM

SOIL REMEDIATION
TRACT I SITE
3123 HIGHLAND AVENUE
NIAGARA FALLS, NIAGARA COUNTY, NEW YORK
SITE NO. C932157

SUBMITTED TO:

THE NEW YORK STATE DEPARTMENT
OF ENVIRONMENTAL CONSERVATION
DIVISION OF HAZARDOUS WASTE REMEDIATION

Prepared for:

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Project 3410130921
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Robert E. Crowley
Senior Principal Scientist

I certify that I am currently a New York State registered professional engineer and that this Interim Remedial Measure Work Plan, where applicable, was prepared in substantial conformance with the DER Technical Guidance for Site Investigation and Remediation (DER-10).

Stuart C. Pearson, P.E.
Principal Engineer (Mactec Engineering and Consulting, P.C.)
August 07, 2013

TABLE OF CONTENTS

TABLES

FIGURES

APPENDICES

ACRONYMS

AAR	Alternatives Analysis Report
ACM	Asbestos Containing Material
Amec	Amec Environment & Infrastructure, Inc.
BCP	Brownfield Cleanup Program
BMP	Best Management Practices
bgs	below ground surface
Brightfields	Brightfields, Inc.
CAMP	Community Air Monitoring Plan
City	City of Niagara Falls, New York
CRIR	Consolidated Remedial Investigation Report
CY	cubic yards
EA	EA Engineering, P.C.
E&E	Ecology & Environment, Inc.
ERP	Environmental Restoration Program
FER	Final Engineering Report
ft-bgs	Feet below ground surface
ft-msl	Feet above mean sea level
ft/sec	Feet per Second
HASP	Health and Safety Plan
IRM	Interim Remedial Measure
JHA	Job Hazard Analysis
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
NYCRR	New York Code of Rules and Regulations
NYSDEC	New York State Department of Environmental Conservation
NYWQS	New York Water Quality Standard
Orin	Orin Remediation Technologies
OSC	Ontario Specialty Contracting, Inc.
OSHA	Occupational Safety and Health Administration
PAHs	polycyclic aromatic hydrocarbons
PCBs	polychlorinated biphenyls
PCW	Power City Warehouse
PID	Photo Ionization Detector
PPE	Personal Protective Equipment
ROD	Record of Decision
SCGs	Standards, Criteria, and Guidance
SCOs	Soil Cleanup Objectives

SI	Site Investigation
Site	Tract I Site
SMP	Site Management Plan
SPLP	Synthetic Precipitate Leaching Procedure
SRI	Supplemental Remedial Investigation
SRIR	Supplemental Remedial Investigation Report
SRIWP	Supplemental Remedial Investigation Work Plan
S.U.	Standard Units of pH
SVOCs	Semivolatile Organic Compounds
TAL	Target Analyte List
TCE	Trichloroethene
TCL	Target Compound List
TCLP	Toxicity Characteristic Leaching Procedure
USEPA	United States Environmental Protection Agency
USGS	United States Geological Survey
UST	Underground Storage Tank
VOCs	Volatile Organic Compounds
WP	Work Plan

1.0 INTRODUCTION

Amec Environment & Infrastructure, Inc. (Amec) has prepared this Addendum to the June 2012 Interim Remedial Measures (IRM) Work Plan (WP) on behalf of Brightfields, Inc. (Brightfields) for the Tract I Site (Site) located at 3123 Highland Avenue, in the City of Niagara Falls (City), Niagara County, New York. This IRM WP Addendum addresses soil remediation on the Site based on the findings of the Supplemental Remedial Investigation (SRI) conducted between July 2012 and April 2013. **Figure 1** shows the location of the Site on a United States Geological Survey (USGS) topographic map and **Figure 2** shows the existing layout of the Site in plan view.

The IRM WP addressed the demolition of portions of the Site buildings and the cleanup of remaining debris and other hazardous materials within the buildings. The purpose of this IRM WP Addendum is to address the remedial approach of impacted soils at the Site as well the removal of two underground storage tanks (USTs) discovered in 2012. Additional details regarding the location and history of the Site, the Site redevelopment plan, the applicable Soil Cleanup Objectives (SCOs), and project organization can be found in the IRM WP (Amec, June 2012).

The Site was the location of a former lead/acid battery remolding and manufacturing plant from approximately 1910 through the early 1970s and has been the subject of four characterization efforts by the New York State Department of Environmental Conservation (NYSDEC), Amec, and a Removal Action by the United States Environmental Protection Agency (USEPA) between 1999 and 2013. Adjacent to the Site, to the south and east, is the Tract II property, which is being addressed under the State of New York Inactive Hazardous Waste Site program.

The City has endeavored to redevelop both the Site and Tract II property since closure of the industrial facilities in the early 1970's. In order to support a viable redevelopment on the Tract II property, Brightfields has elected to also remediate and redevelop the Site under the New York State Brownfield Cleanup Program (BCP; Site No. C932157).

1.1 SUMMARY OF PROPOSED REMEDIATION

Soils that do not meet the TCLP lead delineation criteria that are defined in **Section 3.2.1.1** will either be excavated for ex-situ treatment or treated in-situ, sampled and subsequently disposed offsite as non-hazardous waste (pending analytical results). Soils that are above the Commercial SCO for lead will be sampled in place, excavated, and direct loaded for offsite disposal or will be excavated, segregated into stockpiles, and loaded for offsite disposal as non-hazardous waste (pending analytical results). Other compounds detected above their respective SCOs (polynuclear aromatic hydrocarbons [PAHs], polychlorinated biphenyls [PCBs], and metals) are colocated with

lead, and will be addressed by the excavation of the lead remediation areas. Of the proposed excavation areas, a single area does not contain lead above the SCO or TCLP delineation criteria; this area was found to contain only chromium above the SCO and will be excavated and disposed offsite as non-hazardous waste (pending analytical results). In addition to the soil remediation, two USTs are present at the southeast corner of the former Power City Warehouse (PCW) building. The USTs will be removed, and the nearby soil excavated, as may be necessary.

1.2 WORK PLAN ORGANIZATION

The following sections of this IRM WP Addendum provide the information necessary to identify and evaluate the IRM for the Site. The sections include: Background (Section 2.0), Remedial Design Scope (Section 3.0), Permits and Other Authorizations (Section 4.0), Schedule (Section 5.0), Post-Construction Plans (Section 6.0), and References (Section 7.0).

1.3 LIMITATIONS

This WP presents a summary of information known to Amec concerning the Site that Amec considered applicable to the scope of work and stated project objectives. Amec has performed this work with the care and skill ordinarily used by members of the profession practicing under similar conditions. The conclusions presented herein are those that are deemed pertinent by Amec based upon the implicit accuracy of the available information. No other warranty, expressed or implied, is made as to the professional advice included in this report. The information present in this report is not intended for any use other than the stated objectives of the project. This document was prepared for the sole use of Brightfields, Inc. and the NYSDEC, who are the only intended beneficiaries of our work.

2.0 BACKGROUND

This section provides a summary of the characterization of the Site and incorporates the available data collected in the various phases of the Site investigation. A summary of the data used in the development of this IRM WP Addendum were provided in the Supplemental Remedial Investigation Report (SRIR; Amec, May 2013). Pertinent information from the SRIR is provided below.

2.1 SITE DESCRIPTION

The Site consists of approximately 5.9 acres and was mainly covered by the former PCW building. The building has recently been demolished, and demolition activities at the Site have removed all wooded and grass covered areas. The western portion of the Site consists of an open, former grassy area and a gravel drive to the loading dock area; the southern boundary of the Site consists of a now open, former wooded area that at one time was a rail spur. A segment of a retaining wall is still present on the south side of the former rail spur. The eastern portion of the Site consists of an open, former grassy area, intermixed with broken asphalt and sections of concrete pavement.

The former PCW building was a three-story masonry structure with a small basement area beneath one portion of the building with a total building footprint that once covered approximately 3.3 acres of the Site. In the buildings history, there were numerous additions made to the original structure. Previous investigations of the PCW building have reported that the majority of the structure was constructed on concrete floors approximately six-inches thick. The concrete floors were noted to be in good condition with no major cracking or deterioration (EA, 2009). Several areas of the warehouse concrete floor were overlain with brick, with drains and sumps identified throughout the building.

A second, considerably smaller, one-story building (approximately 462 square feet) is located in the northeast corner of the Site. The smaller building is constructed of brick with a concrete floor. Past investigations have suggested that this building may have been used for chemical storage (E&E, 2000).

2.2 SITE GEOLOGY AND HYDROGEOLOGY

The Geologic Map of New York, Niagara Sheet published by the University of the State of New York, indicates that the Site lies within the Silurian-aged Lockport Group. The Lockport Group consists of Geulph, Oak Orchard, Eramosa, and Goat Island Dolostones and the Gasport Limestone. As a reference, the adjacent site (Tract II) investigation observed that bedrock is between 12.5 and 24.5 feet below ground surface (ft-bgs) in the vicinity of the Site. The

unconsolidated material at the Site consists of various fill materials at the surface, underlain by silty clay that grades into a till unit. Dolostone bedrock is present below the till.

A groundwater characterization study conducted by Amec in 2012 through 2013 indicated that a water bearing zone was present at the Site. Monitoring wells installed at the Site in the overburden soils and fill above the bedrock indicate that groundwater is at an elevation of approximately 575 to 580 feet above mean sea level (ft-msl). This groundwater is likely perched and does not represent a true surficial aquifer. Groundwater flow at the Site appears to be towards the southwest at a hydraulic gradient of 0.01 ft/ft; however, groundwater in the area appears to flow in the southeastern direction. Slug testing of the monitoring wells indicated that the hydraulic conductivity of the silty clay at the Site ranged from $8.8x10^{-6}$ feet per second (ft/sec) to $8.5x10^{-5}$ ft/sec.

Analytical results from samples collected during the 2013 characterization study indicated concentrations of the following compounds above their respective reference New York Water Quality Standards (NYWQS) values for Surface Waters and Groundwater - Class GA:

- Total metals: antimony, sodium, iron and manganese, and lead;
- Dissolved metals: antimony, sodium and manganese;
- Pesticides: endrin, gamma chlordane, beta hexachlorocyclohexane; and
- Volatile organic compound: trichloroethene (TCE).

As a reference, in the adjacent site (Tract II) Ecology and Environment Engineering, P.C. (E&E) site characterization report (E&E, 2000) and in the 2003 Tract II Record of Decision (ROD), NYSDEC concluded that groundwater in the vicinity of Tract II is not a source of potable water, nor is it likely to become one in the future. The report and ROD cited that there is no significant groundwater aquifer in the overburden soils and fill above the bedrock, and the fact that a public drinking water supply system is available throughout the area as justification for this conclusion. Furthermore, a local ordinance prohibits the use of groundwater as a potable water supply in the City and the hydraulic conductivity is such that extracting groundwater for use would be infeasible. For these reasons, it is unlikely that the identified impacts to Site groundwater pose any risk to human health.

2.3 SUMMARY OF REMEDIAL INVESTIGATIONS

The Site was investigated in four efforts between 1999 and 2013. These included the 1999 E&E site investigation, the 2007 - 2008 EA Engineering, P.C. and its affiliate EA Science and Technology (EA) site characterization, the July 2011 Amec predesign study, and the 2012-2013 Amec SRI. Field activities and results from the initial three investigations are detailed in the

Consolidated Remedial Investigation Report (CRIR; Amec, May 2012) and results from the SRI are detailed within the SRIR (Amec, May 2013). A brief summary of each event is provided in the following section.

2.3.1 Site Investigation/Remediation History

In May 1999, an initial investigation was conducted on the Site by E&E for the City under a grant from the NYSDEC. Results from this investigation were presented in a May 2000 Site investigation report (E&E, 2000). In late 2007, the NYSDEC contracted EA to perform an additional Site characterization. Results of that investigation were presented in a May 2009 Site characterization report (EA, 2009).

In late 2009 and in 2010, the USEPA conducted a removal action at the Site. These activities included fencing the Site, removal/cleanup and disposal of lead-contaminated debris including sediments and sludge from within the PCW building, and removal and disposal of some asbestos containing building materials from the Site. Additionally, paint-related materials, PCB light ballasts, batteries, mercury switches, piping and other miscellaneous debris located on the Site were removed and disposed of by the USEPA.

In July 2011, Amec implemented a NYSDEC-approved pre-design study work plan (Mactec, 2011) on the Site. This study was performed to refine the extent of lead identified in surface soil at the Site and to obtain additional data to support anticipated Site remediation. Results of that investigation were presented in the CRIR (Amec, May 2012).

In July and August 2012 and February 2013, Amec implemented a NYSDEC-approved Supplemental Remedial Investigation Work Plan (SRIWP) to fulfill data gaps identified within the above-mentioned CRIR. These data gaps were identified as:

- The collection of waste characterization samples of the remaining debris/sediment in the eastern portion of the building during demolition;
- Characterization of on-site groundwater;
- Delineation of the horizontal extent of PAHs and PCBs within surface soil contained in the eastern end of the property; and
- Delineation of the extent of lead beneath the building slab.

Results of the SRI are presented in the SRIR (Amec, May 2013).

2.3.2 Comprehensive Remedial Investigation Findings

A comprehensive review of the four investigations conducted at the Site yields the following findings. **Figures 3 through 6** display the referenced sample locations and results.

2.3.2.1 Groundwater

Three groundwater samples (one from each of the monitoring wells) were collected on-site. Total sodium, combined total iron and manganese, dissolved sodium, and dissolved manganese were detected above their respective reference NYWQS values in samples collected at each of the wells. In addition, total lead was detected above the NYWQS value in samples collected at T1-MW-02 and T1-MW-03. The sample collected at T1-MW-01 also contained concentrations of endrin and gamma chlordane above the respective NYWQS values. The sample collected at T1-MW-03 contained concentrations of TCE, beta hexachlorocyclohexane, and total antimony above their respective NYWQS values (**Figure 3**). Based on the reasons presented in **Section 2.2**, it is unlikely that these identified impacts to Site groundwater pose any risk to human health.

Groundwater on the Site generally flows towards the southwest (towards the Tract II site) at a gradient of 0.01 ft/ft; the average hydraulic conductivity is approximately $3.3x10^{-5}$ ft/sec.

2.3.2.2 Surface Soil

A total of 27 surface soil (0 to 0.5 ft-bgs) and 10 shallow subsurface soil (0 to 2 ft-bgs) samples have been collected at the Site; shallow subsurface samples (which were only analyzed for total metals) have been included in discussions with surface soil samples due to overlap of intervals. Sample results yielded four metals (arsenic, barium, copper, and lead), TCLP lead, five PAHs (benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, dibenzo(a,h)anthracene, indeno(1,2,3-cd)pyrene), and Aroclor 1260 (PCB-1260) above their respective Commercial SCOs and the TCLP lead standard (**Figure 4**).

Elevated concentrations (above the SCO) of total lead were detected in surface soil and shallow subsurface samples throughout the entire Site, aside from the southwestern corner. TCLP lead concentrations above the TCLP standard of 5 milligrams per liter (mg/L) were detected in samples collected in the northeastern and southern portions of the Site, as well as outside of the southeastern corner of the former PCW. Arsenic and copper were only detected above their respective SCOs colocated with lead above the SCO; these areas are confined to the southern portion of the Site, outside the southeastern corner of the former PCW, and at boring B-22 located on the north side of the Site. Barium was detected above the SCO colocated with each of the metals mentioned above at T1-MW-03; however, barium was detected independently at B-25 located in the southeastern portion of the Site.

Elevated surface soil concentrations (above SCOs) for PAHs were detected colocated with elevated total lead, with the exception of borings B-24 and B-25 located on the eastern side of the Site. Surface soil PAH concentrations above the SCOs were distributed throughout the eastern and southern portions of the Site. Benzo(a)pyrene was the most frequently PAH detected above the SCO; none of the other PAHs were detected above their respective Commercial SCO independently of benzo(a)pyrene.

Only one of the surface soil samples analyzed for PCBs contained concentrations above its respective Commercial SCO. Aroclor 1260 (PCB-1260) was detected above the SCO in the sample collected at SS-PCW-11 (northeastern corner of Site) at an estimated (J) concentration of 3.8 J milligrams per kilogram (mg/kg). This location also detected lead above the SCO.

2.3.2.3 Subslab Soil

Nine subslab soil samples (0 to 0.5 ft interval directly underlying the concrete slab), two composite samples, and 13 shallow subsurface samples (0 to 2 ft-bgs) were collected underlying the former PCW concrete slab (**Figure 4**); the shallow subsurface samples have been included in this discussion due to overlap of intervals. Elevated total lead and total chromium concentrations were detected in samples underlying the slab. Elevated total lead concentrations were detected in the area along the north-central and northeastern portion of the slab (B-27, SB-08, SB-12, B-33, SS-PCW-07, and aliquots 9b and 9c of SS-PCW-09) as well as the south-central portion of the slab (aliquot 9a of SS-PCW-09). Chromium was only detected at a concentration above its respective Commercial SCO in the sample collected at SB-11.

All subslab lead samples that were analyzed for TCLP were below the TCLP standard. The sample collected at B-33 and composite samples SS-PCW-07 and SS-PCW-09 were not analyzed for TCLP lead; however, these samples will be categorized for IRM purposes as if the results are above the 5 mg/L TCLP standard due to the elevated concentrations of total lead (25,000 mg/kg, 178,000 mg/kg, and 31,800 mg/kg, respectively).

PAHs and PCBs (where analyzed) were only detected at concentrations above their respective Commercial SCOs in the composite sample collected at SS-PCW-09. Concentrations of benzo(a)anthracene, benzo(b)fluoranthene, benzo(a)pyrene, indeno(1,2,3-cd)pyrene, and dibenzo(a,h)anthracene, and PCB Aroclor 1254 were detected at concentrations above their respective Commercial SCOs.

It should be noted that one of the aliquots of composite sample SS-PCW-09 (aliquot 9b) contained debris from a 2-inch floor drain. Although the debris at aliquot 9b was likely removed

during the Removal Action conducted by the USEPA, all aliquot locations of SS-PCW-09 have been considered and included in this IRM WP Addendum to remain conservative.

2.3.2.4 Subsurface Soil

A total of 30 subsurface soil (defined as being collected from an interval greater than 0.5 ft-bgs) samples were collected on the Site. Samples containing lead above the Commercial SCO were collected in the southern and northeastern portions of the Site and outside the southeastern corner of the former PCW building. In addition, samples collected from the northeastern portion of the Site also contained TCLP lead above the 5 mg/L standard. Lead concentrations above the SCO in the southern portion of the Site and outside the southeastern corner of the former PCW building were detected in samples from depths ranging from 1.0 to 2.0 ft-bgs. Concentrations of lead above the SCO as well as the TCLP standard in the northeastern portion of the Site were detected at depths of 5.5 to 6.0 ft-bgs at boring B-23 and 6.5 to 7.0 ft-bgs at boring B-22 (**Figure 5**).

2.3.2.5 Brick Bedding Material

A total of five brick bedding material samples were collected during the supplemental investigation. Two of the analyzed sample locations contained detections of PCBs and/or lead above their respective Commercial SCOs. PCB-1254 (Aroclor 1254) was detected at concentrations above its respective Commercial SCO in the samples collected at BB-4 and BB-7 and PCB-1260 (Aroclor 1260) was detected at a concentration above its respective Commercial SCO in the sample collected at BB-4. Lead and TCLP lead were detected at concentrations above the Commercial SCO and the 5 mg/L TCLP standard in the sample collected at BB-4 (**Figure 6**).

2.3.2.6 Underground Storage Tanks

During installation of monitoring well T1-MW-02 outside the southeast corner of the former PCW building, two USTs were observed. Two USTs are shown on a 1914 Sandborn Map and presumably, had since been partially covered by the building slab. The approximate location of the USTs is shown on **Figure 2**. Field investigations identified the southeast end of the tanks outside the southeast corner of the former PCW building, extending away from T1-MW-02 towards the northeast. Neither of the tanks was observed to currently contain petroleum-based products; water was observed within one of the tanks.

2.4 REMOVAL ACTION

Debris located throughout the PCW building was found to contain four metals (arsenic, copper, lead, and mercury), semivolatile organic compounds (SVOCs) (mainly PAHs), and PCBs (Aroclor 1254 and Aroclor 1260) above Commercial SCOs. Additionally, all TCLP metals samples collected within the eastern portion of the building were above the TCLP standard for

lead. The USEPA removal action performed in 2010 removed a significant amount of debris and other hazardous material from the PCW building, but did not address the eastern portion of the building, due to safety concerns. Remaining debris within the eastern portion of the PCW was consolidated and appropriately sampled for disposal by Ontario Specialty Contracting, Inc. (OSC) in late 2012. Material was shipped offsite via roll off boxes following characterization.

2.5 SUMMARY OF TRACT II BENCH-SCALE TESTING

In July of 2011, Mactec Engineering and Consulting, Inc. (now Amec) completed a predesign study on the Tract II site, which included bench-scale treatability testing of lead within soils. Results of this testing were ultimately used to determine the treatment method of soils containing elevated concentrations of lead. Due to the similar concentrations of lead on the Site, the results of the adjacent Tract II bench-scale treatability testing results were also applied to the Site. The following paragraphs summarize the results of the bench-scale testing.

Samples were collected from two test pits located on the Tract II site for bench-scale treatability testing of the lead. The treatability samples were collected from test pits that represented the highest lead concentrations (140,000 mg/kg) and moderate levels of lead (32,000 mg/kg) detected in the 2009 Supplemental Investigation (EA, 2009).

Each treatability sample was split and shipped to Orin Remediation Technologies (Orin) and WRS Compass for testing. Fourteen treatment reagents were evaluated in the study. The treatability studies included analysis of the samples for total and TCLP lead, treatment with various concentrations of the reagents, and reanalysis of the treated soil for TCLP lead to determine the appropriate reagent and concentration to be used to achieve a TCLP lead result less than 5 mg/L. Orin also analyzed each sample using Synthetic Precipitate Leaching Procedure (SPLP) analysis to ensure that lead would not leach under simulated rainwater infiltration conditions. The results of the bench-scale treatability tests are discussed below and copies of the reports are located in Appendix B of the August 2012 Tract II Remedial Design Work Plan (Amec, 2012).

The results of the Orin treatability tests indicated that mixtures of 3% EnviroBlend® 90/10 Coarse, 3% EnviroMag® Coarse, 8% Free Flow® 100, and 5% Free Flow® 200 all achieved TCLP lead concentrations of below 5 mg/L in both samples tested. In addition, a mixture of 4% Free Flow® 100 containing magnesium oxide achieved a TCLP of less than 5 mg/L in sample MTP-1, which was the only sample tested with this reagent mix. The results of the SPLP analysis indicate that lead becomes more soluble at the high pH level (12.25 standard units [s.u].of pH) produced by Free Flow® 200. The results suggest that if the mix raises the pH above 10.5 s.u.,

lead would become detectable in the SPLP analysis, and at a pH above approximately 11.5 s.u. the SPLP results began to approach 5 mg/L.

Evaluation of the results of the treatability studies conducted by Orin conclude that 3% EnviroBlend® 90/10 Coarse, 3% EnviroMag® Coarse, 8% Free Flow® 100, and 4% Free Flow® 100 combined with magnesium oxide all meet the goal of reducing the TCLP lead in soil to below regulatory levels. These doses were also effective in keeping the SPLP results either non-detectable or very low (in the range of 0.1 mg/L).

The results of the WRS Compass treatability tests indicated that mixtures of 5% Portland cement, 3% hydrated lime, 4% EnviroMag® Coarse, 2% phosphoric acid, 2% triple superphosphate, 3% EnviroBlend® 80/20, and 3% EnviroBlend® 20/80 all achieved TCLP lead concentrations of below 5 mg/L in both samples tested. WRS Compass did not conduct SPLP analysis on the samples; however, it may be inferred from the Orin testing that only hydrated lime above 4% may increase the pH to levels that could mobilize the lead under SPLP testing.

Evaluation of the results of the treatability studies conducted by WRS Compass conclude that that mixtures of 5% Portland cement, 4% EnviroMag® Coarse, 2% phosphoric acid, 2% triple superphosphate, 3% EnviroBlend® 80/20 and 3% EnviroBlend® 20/80 all meet the goal of reducing the potential leachability of the lead in soil to below regulatory levels. These doses are also likely to keep the SPLP results either non-detectable or very low (in the range of 0.1 mg/L) based upon SPLP results obtained by Orin. WRS Compass recommended treatment of the soil with either 5% Portland cement, 3% EnviroMag® Coarse, or 3% EnviroBlend® 80/20.

Based on the recommendations provided by Orin and WRS Compass, four reagents were evaluated relative to total cost to implement the treatment. These included EnviroBlend® 90/10 Coarse, EnviroMag® Coarse, Free Flow® 100 with magnesium oxide, and Portland cement. EnviroBlend® 80/20 was not evaluated because it would be added in the same quantity as EnviroBlend® 90/10 Coarse, but costs more, and is therefore less cost-effective. Based on the effectiveness of the reagents and the overall cost of treatment, the use of Portland cement at a 5% weight ratio appears to be the most cost-effective treatment technique for the soils containing TCLP lead in concentrations above 5 mg/L.

3.0 REMEDIAL DESIGN SCOPE

3.1 REMEDIAL ACTION OBJECTIVES

The majority of the soil above the Commercial SCOs is located on the exterior of the former PCW building footprint. This area contains concentrations of lead and other constituents (PAHs, PCBs, and other metals) in soil above their respective SCOs. Additional areas of soil containing concentrations of these same constituents above their respective Commercial SCOs are present under the northern portion of the former PCW slab. Approximately 42 percent of the impacted soil contains or is assumed to contain lead at concentrations that do not meet the TCLP standard of 5 mg/L. In addition, an isolated area underlying the southeastern portion of the slab contains concentrations of chromium above its respective Commercial SCO.

The goals of the NYSDEC remedial program are to meet the SCOs, and be protective of human health and the environment. At a minimum, "the remedy must eliminate or mitigate all significant threats to the public health and to the environment presented by the hazardous substance and hazardous waste disposed at the Site through the proper application of scientific and engineering principles" (NYSDEC, 2010).

The proposed future use of the Site includes educational and commercial facilities, both of which are consistent with the commercial Standards, Criteria, and Guidance (SCGs). Commercial uses are defined in the NYSDEC Technical Guidance DER-10, and are among the most restrictive site uses described in the land-use hierarchy.

Based on existing zoning, the proposed land uses and land-use controls, the following are remedial objectives that will be protective of human health and the environment, meet the SCGs, and encourage redevelopment of the Site:

- Excavation and offsite disposal of soils above the respective Commercial SCOs where feasible; and
- Treatment, excavation, and offsite disposal of soils exceeding the TCLP lead standard of 5 mg/L where feasible.

In addition to remediation of soils, two USTs will also be removed and formally closed and the floor slab and any frost walls or piping associated with the former PCW building will be removed.

3.2 IDENTIFICATION OF IMPACTED AREAS AND SOIL VOLUMES

3.2.1 Soils Containing Elevated Lead

Most of the Site soils that contain detections above the Commercial SCOs have elevated lead concentrations. In situations where other constituents (PAHs, PCBs, and other metals) have been detected above their respective SCOs, lead is also typically present above its respective SCO. For this reason, the remedial approach for Site soils will focus on elevated lead concentrations, which will in turn, also address the other constituents detected in Site soils at elevated levels.

3.2.1.1 Delineation Methodology

The potentially applicable remedial approaches were evaluated in consideration of the sample data plotted on Site plans according to depth. The data were evaluated in two-foot intervals from the ground surface to approximately eight ft-bgs. Once plotted, excavation areas were delineated using the TCLP lead samples not meeting 5 mg/L standard and total lead concentrations greater than 2,000 mg/kg. Based on the results of the large sample database, the total lead concentrations less than 2,000 mg/kg are not likely to produce TCLP results that exceed the TCLP standard. TCLP results at certain intervals for some sample locations were inferred using either TCLP results or total lead results from above and/or below the interval. Hereinafter when referring to meeting or not meeting the TCLP delineation criteria for lead, the preceding delineation methodology is applicable.

Excavation areas were also placed around samples not meeting the Commercial SCO of 1,000 mg/kg for total lead. In areas containing data gaps between intervals, the results were inferred using results from above and/or below the interval.

3.2.1.2 Excavation Areas

The delineation of surface soils (0-2 ft-bgs) and subsurface soils (2-8 ft-bgs) containing lead concentrations above the respective standards are shown on **Figures 7** and **8**, respectively. As can be seen on **Figure 7**, four lead excavation areas and one small chromium "target" excavation area have been identified for excavation.

3.2.1.2.1 Lead Excavation Area 1

The largest excavation area, hereafter referred to as Excavation Area 1, is located along the southern, eastern, and northeastern portions of the Site. The majority of Excavation Area 1 is located on the exterior of the former PCW building footprint; however, two areas extend into the northeastern portion and one area extends into the southern portion of the former building footprint.

Soils that meet the TCLP standard for lead but do not meet the Commercial SCO for lead are located in the eastern and northwestern portions of Excavation Area 1 to a depth of two ft-bgs.

Soils that do not meet the TCLP delineation criteria for lead are found in the following areas of Excavation Area 1:

- In the southern portion, as well as around Boring 4 (SS-PCW-04) and monitoring well T1-MW-02 to a depth of two ft-bgs, and
- In the northern portion of this area to a depth of six ft-bgs near boring B-23, and a depth of eight ft-bgs near boring B-22.

The estimated volume of soils not meeting the TCLP lead delineation criteria is 3,666 cubic yards (CY) or approximately 6,200 tons, using an assumed bulk density of 1.7 tons/CY; the estimated volume of soils not meeting the Commercial SCO for lead is 3,485 CY or approximately 5,900 tons.

3.2.1.2.2 Lead Excavation Area 2

Excavation Area 2 is located in the north-central portion of the former PCW building footprint. This excavation area extends to a depth of two ft-bgs and contains soils that do not meet the TCLP lead delineation criteria (centered at boring SB-08 and aliquot 9c) as well as soils that meet the TCLP lead standard but are above the Commercial SCO for lead (boring B-27). The estimated volume of soils not meeting the TCLP lead delineation criteria is 70 CY or approximately 120 tons; the estimated volume of soils not meeting the Commercial SCO for lead is 218 CY or approximately 370 tons.

3.2.1.2.3 Lead Excavation Area 3

Excavation Area 3 is located in the western portion of the Site. This excavation area extends to a depth of two ft-bgs and contains soil that meets the TCLP standard for lead but is above the Commercial SCO for lead. The estimated volume of soils not meeting the Commercial SCO is 725 CY or approximately 1,200 tons.

3.2.1.2.4 Lead Excavation Area 4

Excavation Area 4 is located in the north-western portion of the former PCW building footprint. This excavation area extends to a depth of two ft-bgs and contains soil above the Commercial SCO that does not meet the TCLP lead delineation criteria. The estimated volume of soils not meeting the delineation criteria is 133 CY or 226 tons.

3.2.2 Other Compounds Detected Above SCOs

3.2.2.1 Excavation Area 1

In addition to lead being detected above the Commercial SCO, surface soils within the eastern and southern portions of Excavation Area 1 also contain PAHs, PCBs, and other metals at concentrations above their respective Commercial SCOs. **Figure 9** illustrates the delineated areas and the excavation areas are shown on **Figure 7**. **Figure 9** indicates the following compounds were detected above their respective Commercial SCO with the maximum concentration presented for reference:

- PAHs: benzo(a)anthracene (57 mg/kg), benzo(a)pyrene (59 mg/kg), benzo(b)fluoranthene (84 mg/kg), dibenzo(a,h)anthracene (3.3 J mg/kg), and indeno(1,2,3-cd)pyrene (20 mg/kg);
- PCBs: Aroclor 1254 (17 mg/kg) and Aroclor 1260 (3.8 J mg/kg); and
- Metals: arsenic (128 mg/kg), barium (744 mg/kg), and copper (634 mg/kg).

These areas will be addressed concurrent with the lead remediation activities with no additional excavation volume anticipated.

3.2.2.2 Excavation Area 2

In addition to elevated lead, composite sample SS-PCW-09 associated with aliquot 9c also detected PAHs and PCB Aroclor 1254 above the Commercial SCOs. **Figure 9** illustrates the delineated area. The figure indicates the following compounds were detected above their respective Commercial SCOs with the maximum concentration presented for reference:

- PAHs: benzo(a)anthracene (29 mg/kg), benzo(a)pyrene (31 J mg/kg), benzo(b)fluoranthene (35 J mg/kg), dibenzo(a,h)anthracene (2.7 J mg/kg), and indeno(1,2,3-cd)pyrene (7.5 J mg/kg); and
- PCBs: Aroclor 1254 (17 mg/kg).

These areas will be addressed concurrent with the lead remediation activities with no additional excavation volume anticipated.

3.2.2.3 Excavation Area 4

In addition to elevated lead, composite sample SS-PCW-09 associated with aliquot 9b also detected PAHs and PCB Aroclor 1254 above the Commercial SCOs. **Figure 9** illustrates the delineated area. The following compounds were detected above their respective Commercial SCOs with the maximum concentration presented for reference:

- PAHs: benzo(a)anthracene (29 mg/kg), benzo(a)pyrene (31 J mg/kg), benzo(b)fluoranthene (35 J mg/kg), dibenzo(a,h)anthracene (2.7 J mg/kg), and indeno(1,2,3-cd)pyrene (7.5 J mg/kg); and
- PCBs: Aroclor 1254 (17 mg/kg).

These areas will be addressed concurrent with the lead remediation activities with no additional excavation volume anticipated.

3.2.3 Chromium Target Excavation Area

In addition to the lead-impacted soils on the Site, one small surface soil target area contains chromium above the Commercial SCO. The area near SB-11 (**Figure 9**) will be excavated to two ft-bgs with an estimated volume of less than 35 CY of soil or approximately 60 tons.

3.3 SUMMARY OF AREAS REQUIRING REMEDIAL ACTION

Four excavation areas have been delineated to address lead impacted soils. **Figures 7** and **8** show the excavation areas. The total estimated volume of soils that do not meet the TCLP delineation criteria for lead is 3,869 CY or approximately 6,600 tons, using a conversion factor of 1.7 tons/CY; the estimated volume of soil that does not meet the Commercial SCO for lead is 4,428 CY or approximately 7,500 tons.

In addition to lead, surface soil in the eastern and southern portions of Excavation Area 1 also contain several PAHs, PCBs, and other metals at concentrations above their respective SCOs; surface soils located at aliquots 9c and 9b of composite sample SS-PCW-09 in Excavation Areas 2 and 4, respectively, also contain concentrations of several PAHs and PCB Aroclor 1254 above their respective SCOs. These soils will be addressed during lead remediation.

In addition to the lead-impacted soils on the Site, one small surface soil target area is present that does not meet the Commercial SCO for total chromium; an estimated volume of less than 35 CY of soil or approximately 60 tons will be excavated.

As a reference, investigations on the Tract II site have identified Technologically Enhanced Naturally Occurring Radioactive Material (TENORM) Slag. The perimeter of the Tract I Site was surveyed and no evidence of TENORM slag was uncovered; however, TENORM Slag has been identified beneath the former PCW building slab. A radiological survey will be performed as the slab is removed to determine if additional TENORM Slag is present. A radiological surface survey work plan for this work was approved by the NYSDEC on April 22, 2013. TENORM Slag encountered on Tract I will be managed in accordance with the Radiological Addendum to the Remedial Design Work Plan, with the exception that if TENORM Slag is

encountered deeper than four feet, the TENORM excavation activities will stop, the area will be reassessed if necessary, and the NYSDEC will be consulted on further action(s).

3.4 REMEDIAL APPROACH

The data obtained from the previous four investigations, summarized in **Section 2.3**, has been used to develop the conceptual remedial approach for the Site, as presented in the following subsections. Remedial design work plan drawings depicting Site remediation areas, access roadways, proposed utility corridors, staging areas, proposed final grades, and erosion and sediment control measures are shown in **Appendix A**.

3.4.1 Concrete Foundation Demolition

Foundation slabs associated with the former PCW building will be removed prior to soil remediation. The concrete floor slab along with the associated footers will be either disposed of offsite or crushed into four inch and smaller pieces for reuse on-site. Sampling protocols have been outlined in Section 3.3.4 (Post Demolition Sampling) of the June 2012 IRM WP (Amec, June 2012). Piping associated with the foundation will be broken into manageable pieces for offsite disposal.

3.4.2 Underground Storage Tank Removal

During installation of monitoring well T1-MW-02 at the southeast corner of the former PCW, two USTs were observed. Two USTs are shown on a 1914 Sandborn Map and presumably, had since been partially covered by the building slab. The approximate location of the USTs is shown on **Figure 2**. Field investigations identified the southeast end of the tanks outside the southeast corner of the PCW building extend away from T1-MW-02 towards the northeast. Neither of the tanks was observed to currently contain petroleum-based products; water was observed within one of the tanks.

The USTs will be closed and removed in accordance with Section 5.5 of DER-10; removal and closure will occur prior to soil excavation activities. The tanks will be removed via excavation and closed by cutting holes in each and shipping offsite for disposal. Although not expected, any grossly contaminated soil or bedding material encountered (as defined by visual and photo ionization detector (PID) measurements) beneath and around the tanks will be handled, characterized, and disposed of accordingly. The water in the tanks will be pumped into holding tanks pending sample results, and, if necessary disposed of appropriately. Sampling parameters will be determined based on the selected disposal method/facility.

Following removal, the resulting excavation area will be characterized in accordance with Section 5.5 (c) 3. iii. (2) of DER-10, which outlines characterization for tank removal excavations that

encounter groundwater without evidence of tank discharge for tanks storing media with a density less than or equal to water (if other conditions are observed, characterization will be conducted in accordance with Section 5.5 [c] of DER-10). Confirmatory sidewall samples will be collected at a frequency of one sample per 30 linear feet of excavation perimeter (minimum of one sample per sidewall). Sidewall samples will be collected near or above the water table and will be biased based on field screening to the suspected location of greatest contamination. In addition, if groundwater is present in the excavation, a groundwater sample will be collected. Confirmatory soil samples and groundwater samples will be collected for the following parameters:

- Target Compound List (TCL) Volatile Organic Compounds (VOCs) by USEPA SW-846 Method 8260;
- TCL SVOCs by USEPA SW-846 Method 8270;
- Target Analyte List (TAL) Metals by USEPA SW-846 Method 6010;
- TCL Organochlorine Pesticides by 8081A; and
- PCBs by USEPA SW-846 Method 8082.

The final extent of the excavation will be determined based on analytical results of the confirmatory soil samples.

3.4.3 Soil Remediation Quantities and Locations

Using the results of the previous investigations, the limits of proposed excavation for soils not meeting the applicable Commercial SCOs and TCLP delineation criteria for lead have been identified throughout the Site. The proposed excavation areas are identified on **Figures 7** and **8** in two-foot intervals from the ground surface to approximately eight ft-bgs. Refer to **Section 3.2** for details regarding excavation area locations and volumes. The final excavation areas and volumes within these areas may vary based on field conditions (encountering native soils) and the analytical results of confirmation samples collected from the excavation sidewalls and bottoms.

3.4.4 Soil Excavation and Staging

Excavation activities will take place in several stages throughout the construction process. These stages include non-hazardous lead soil excavation (including soils containing elevated concentrations of PAHs, PCBs, and other metals), hazardous lead soil excavation, and a "target" chromium soil excavation. Site access roadways are shown on Drawing C-104 of **Appendix A**. Each excavation area will be completed using similar excavation guidelines:

General – Lead Soil Area Excavation

- Caution will be exercised where excavations are near property boundaries, active storm/process sewers, active electrical conduits, and fence lines.

- Prior to excavation, the contractor will remove surface pavements and building foundations that are present within the limits of excavation. Concrete and/or asphalt will be crushed, sampled, and reused on Site, pending analytical results (per the IRM WP [Amec, June 2012]).
- Soils will be sampled in place or following stockpiling via composite samples as detailed in **Section 3.4.5.2**. Sample results will be used to determine disposal methods.
- The excavated soil will either be direct loaded for disposal or stockpiled in approximately 1,000 CY piles in a common bermed stockpile area that is lined. Stockpiles will be covered with plastic sheeting to prevent rain infiltration and erosion.
- The Contractor will provide dust control equipment/material on-site for use as needed.
- The Contractor will provide air monitoring as necessary during excavation activities in accordance with the Contractor's Site-specific Health and Safety Plan (**Section 4.3**) and the Community Air Monitoring Plan (**Section 4.4**).
- A New York-licensed surveyor will survey the final excavation limits. The survey data will be used to prepare the record drawings.

3.4.4.1 Non-Hazardous Lead Soil Excavation

Non-hazardous soils, defined as meeting the TCLP lead standard, but not meeting respective Commercial SCOs for lead, as well as select PAHs, PCBs, and metals (within Excavation Area 1), will be excavated according to the depths outlined on **Figures 7** and **8** unless native soils are encountered, in which case a confirmatory sample will be collected as discussed in **Section 3.4.5.1**. These soils have a calculated in-place total volume of 4,428 CY. Final excavation limits will be determined based upon excavation confirmatory sample results discussed in **Section 3.4.5**.

Soil will either be sampled in place, excavated, and direct loaded for offsite disposal or excavated, placed into stockpiles in the material staging area located in the western portion of the former PCW slab, and loaded for offsite disposal (pending analytical results). Soil that meets the TCLP lead standard of 5 mg/L will be disposed of offsite as non-hazardous. Soils not meeting the TCLP lead standard will be treated/stabilized and re-sampled for offsite disposal.

3.4.4.2 Hazardous Lead Soil Excavation

Soils that do not meet the TCLP lead delineation criteria will either be excavated for treatment or treated in-situ prior to sampling and disposal offsite as non-hazardous (pending analytical results). Based on the results of previous investigations, an estimated 3,869 CY of in-place soil does not meet the TCLP lead delineation criteria. In general, these soils will be treated in place to the depths outlined on **Figures 7** and **8**. Excavation limits will be determined based upon excavation confirmatory sample results as discussed in **Section 3.4.5**.

In-situ treatment will be conducted through the application of Portland cement at a rate of 170 pounds per CY (5% by weight ratio, assuming 1.7 tons per CY of soil). The cement will be applied in two to four foot intervals at the appropriate rate (i.e., one 2,000 pound bag per 160 square feet) and thoroughly mixed with the corresponding soil interval utilizing an excavator bucket or similar equipment. Any oversized materials (construction debris, boulders, structural steel, etc.) encountered prior to or during treatment will be removed from the soil and disposed of appropriately.

Treated soils will be sampled for TCLP lead by SW-846 Method 1311/6010 in accordance with **Section 3.4.5.2**. Treated soil meeting the TCLP standard will be direct loaded into trucks using an excavator for offsite disposal as non-hazardous waste. Soil not meeting the 5 mg/L TCLP standard will be retreated following the procedure stated above and re-sampled. If retreatment is unsuccessful, a field decision will be made to retreat the soil again or dispose of it offsite as hazardous waste.

3.4.4.3 Target Soil Excavation (Chromium)

One target excavation is proposed on the Site; this target excavation is located at SB-11 (**Figure 7**) and will address an isolated area of subslab soils above the Commercial SCO for chromium. The excavation depth is proposed to reach a depth of two ft-bgs and a total volume of less than 35 cubic yards is anticipated. The excavated soil will be screened and placed in stockpiles located in the western portion of the former PCW slab. Excavation limits will be determined based upon excavation confirmatory sample results as discussed in **Section 3.4.5**.

3.4.5 Performance Criteria and Monitoring

The following section describes the soil staging, sample collection methods, and sampling frequency for each of the excavation areas described in this IRM WP Addendum. This section has been prepared in accordance with DER-10.

3.4.5.1 Excavation Sampling

Sampling frequencies have been developed in accordance with DER-10 Section 5.4 (b) 5. The following section summarizes the proposed sampling frequencies for each of the excavation areas. All sample locations will be biased based on field screening to the suspected location of greatest contamination. Confirmatory samples may be collected from excavation depths shallower than planned if visual cues indicate that either native material has been encountered, or the soil no longer appears impacted. Analytical results will ultimately guide the limits of the excavation. The approximate locations of the proposed samples are shown on **Figures 11** and **12**; associated analyses are shown on **Table 1**.

3.4.5.1.1 Excavation Area 1

Excavation Area 1 will address both surface and subsurface soils; as such, sidewall samples will be collected from within the 0-2 ft-bgs interval to address surface soils. For deeper portions of the excavation area, additional sidewall samples will be collected from within the final two foot interval to address subsurface soils. Base confirmatory samples will also be collected from the bottom of the excavation area.

3.4.5.1.1.1 Sidewall Samples

The perimeter of the 0-2 ft-bgs excavation is approximately 2,775 ft; as such, a reduction to the frequency of sampling is proposed in accordance with DER-10 Section 5.4 (b) 5 iii (2). The Site has been fully characterized during previous investigation events and the majority of the excavation sidewalls are located along the property boundaries; as such, surface sidewall samples are proposed to be collected at a frequency of one per 100 linear feet of the excavation with at least one sample collected per sidewall. Based on this frequency, approximately 36 sidewall samples are proposed to be collected from the surface of the excavation.

Samples will also be collected at the frequency proposed above from the sidewalls of areas within Excavation Area 1 that originally contained compounds other than lead at concentrations above their respective Commercial SCOs (**Figure 10**). For the sub-areas that are initially 25' x 25', the initial confirmatory samples for non-lead compounds will be collected in accordance with DER-10 Section 5.4 (b) 5 ii.

The subsurface portion of Excavation Area 1 consists of two subareas. The northeastern subarea of the excavation has a perimeter of approximately 480 ft; as such, a frequency of one subsurface sidewall sample per 100 linear feet of the subarea is proposed. Five subsurface sidewall samples are proposed to be collected in this subarea. The subarea around B-22 has a perimeter of approximately 85 ft; as such the subsurface sidewall sampling frequency contained within DER-10 Section 5.4 (b) 5 ii will be applied. One subsurface sidewall sample is proposed to be collected per 30 linear feet of excavation subarea sidewall with at least one sample collected per sidewall. Four subsurface sidewall samples are proposed to be collected within this subarea.

Since the excavation area will not be extended beyond the property boundary, sidewall samples located along the property boundary will be record samples; sidewall samples collected at locations not corresponding to the property boundary will be confirmatory samples and data from these samples will be used to determine excavation limits.

3.4.5.1.1.2 Base Confirmatory Samples

As discussed in the previous section, the Site has been fully characterized during previous investigation events; as such, base confirmatory samples will be collected from the bottom of the excavation area on a grid of 100 foot centers. With a grid of 100 feet, approximately 16 confirmatory base samples are proposed to be collected. Due to the varying depths of Excavation Area 1, the proposed locations of the base confirmatory samples will account for each of the subareas to ensure that the base of all subareas are characterized.

3.4.5.1.2 Excavation Area 2

Excavation Area 2 will only address soils at depths of 0-2 ft-bgs. As such, only surface sidewall samples and base confirmatory samples are proposed. The perimeter of the excavation area is approximately 230 ft; however, the area has been fully characterized through prior sampling. As such, a reduction to the frequency of sampling is proposed as stated in DER-10 Section 5.4 (b) 5 iii (2).

One surface sidewall sample is proposed to be collected per 100 linear feet of excavation area sidewall with at least one sample collected per sidewall; four surface sidewall samples are proposed to be collected within this area. Base confirmatory samples will be collected from the bottom of the excavation area on a grid of 100 foot centers; one base confirmatory sample is proposed.

Samples will also be collected at the sidewalls of areas within Excavation Area 2 that originally contained compounds other than lead detected at concentrations above respective Commercial SCOs (**Figure 10**). For the sub-area that is initially 25' x 25', the initial confirmatory samples for non-lead compounds will be collected in accordance with DER-10 Section 5.4 (b) 5 ii.

Since the excavation area will not be extended beyond the property boundary, sidewall samples located along the property boundary will be record samples; sidewall samples collected at locations not corresponding to the property boundary will be confirmatory samples and data from these samples will be used to determine excavation limits.

3.4.5.1.3 Excavation Area 3

Excavation Area 3 will only address soils at depths of 0-2 ft-bgs. As such, only surface sidewall samples and base confirmatory samples are proposed. The perimeter of the excavation area is approximately 400 ft; as such, a frequency of one surface sidewall sample per 100 linear feet of excavation area sidewall is proposed in accordance with the frequency reduction outlined in DER-10 Section 5.4 (b) 5 iii (2). As such, a total of four surface sidewall samples are proposed to

be collected. Base confirmatory samples will be collected from the bottom of the excavation area on a grid of 100 foot centers; one base confirmatory sample is proposed.

Since the excavation area will not be extended beyond the property boundary, sidewall samples located along the property boundary will be record samples; sidewall samples collected at locations not corresponding to the property boundary will be confirmatory samples and data from these samples will be used to determine excavation limits.

3.4.5.1.4 Excavation Area 4

Excavation Area 4 will only address soils at depths of 0-2 ft-bgs. As such, only surface sidewall samples and base confirmatory samples are proposed. The perimeter of the excavation area is approximately 220 ft; however, the area has been fully characterized through prior sampling. As such, a reduction to the frequency of sampling is proposed as stated in DER-10 Section 5.4 (b) 5 iii (2).

One surface sidewall sample is proposed to be collected per 100 linear feet of excavation area sidewall with at least one sample collected per sidewall; four surface sidewall samples are proposed to be collected within this area. Base confirmatory samples will be collected from the bottom of the excavation area on a grid of 100 foot centers; one base confirmatory sample is proposed.

Samples will also be collected at the sidewalls of areas within Excavation Area 4 that originally contained compounds other than lead detected at concentrations above respective Commercial SCOs (**Figure 10**). For the sub-area that is initially 25' x 25', the initial confirmatory samples for non-lead compounds will be collected in accordance with DER-10 Section 5.4 (b) 5 ii.

3.4.5.1.5 Chromium Target Excavation Area

The target excavation area will only address surface soils impacted with chromium. As such, only surface sidewall samples and base confirmatory samples are proposed. The perimeter of the excavation area is approximately 100 ft; as such, a frequency of one surface sidewall sample per 30 linear feet of sidewall is proposed (in accordance with the frequency outlined in DER-10 Section 5.4 [b] 5ii). As such, a total of four surface sidewall samples are proposed to be collected. Base confirmatory samples will be collected from the bottom of the excavation area on a grid of 100 foot centers; one base confirmatory sample is proposed.

3.4.5.1.6 Sample Analysis

Each of the sidewall samples (surface and subsurface) and base confirmatory samples collected from Excavation Areas 1 through 4 will be analyzed for lead (SW-846 Method 6010B).

Additional analyses will be conducted on select surface sidewall samples and base samples collected in Excavation Areas 1, 2, and 4 due to the presence of PAHs, PCBs, and other metals (**Figure 10)**. For each respective area, only compounds previously detected at concentrations above their respective Commercial SCOs will be analyzed. Samples located within the PAH impacted areas will be analyzed for select PAHs by SW-846 Method 8270C, those located within the PCB impacted areas will be analyzed for select PCBs by SW-846 Method 8082, and those located within the area impacted with other metals (in addition to lead) will be analyzed for select metals by SW-846 Method 6010B.

All soils being shipped offsite for disposal will be sampled as described within **Section 3.4.5.2**. Since sidewall and base confirmatory samples will be analyzed for lead and compared to the Commercial SCO, no sidewall or base samples will be collected for TCLP lead analysis.

Samples collected from the chromium target excavation area will be analyzed for chromium via SW-846 Method 6010B.

3.4.5.2 Waste Characterization Sampling

All soils will be properly characterized prior to being shipped offsite. Waste characterization samples will either be collected from in place soils or from soil stockpiles. Each sample will be a composite sample from approximately 1,000 CY of in place soils or from an individual 1,000 CY stockpile. Each composite sample will consist of five aliquots collected from a minimum of five locations and will be analyzed for the following parameters:

- TCLP VOCs by USEPA SW-846 Method 1311/8260;
- TCLP SVOCs by USEPA SW-846 Method 1311/8270;
- TCLP RCRA metals by USEPA SW-846 Method 1311/6010;
- PCBs by USEPA SW-846 Method 8082;
- Ignitability;
- Corrosivity; and
- Reactivity.

Soil that meets the TCLP standards (and other acceptance criteria) will be disposed of offsite as non-hazardous waste. Soils not meeting the TCLP lead standard will be treated/stabilized and re-sampled for offsite disposal.

In general, soil that does not meet the TCLP delineation criteria for lead will be treated in place with 5% Portland cement. Following the initial treatment, it will be determined if additional treatment is necessary (does not meet the hazardous lead threshold of 5 mg/L TCLP). If the

laboratory results indicate that the soil meets the TCLP lead standard, the treated soil will be shipped offsite as non-hazardous waste. If the TCLP lead results are greater than 5 mg/L, the soil will be retreated as described in **Section 3.4.4.2**. Following successful treatment, the soil will be direct loaded for offsite disposal as non-hazardous waste or stockpiled in the western portion of the former PCW slab. The soil will then be shipped offsite as non-hazardous waste. If retreatment is unsuccessful, a field decision will be made to retreat the soil again or dispose of it offsite as hazardous waste.

3.4.5.3 Imported Backfill Sampling

Fill material imported to the Site will be sampled to meet all requirements located in Section 5.4(e) of DER-10. Because of the large amount of imported backfill, the sampling frequency will be reduced if a consistent trend of compliance is established. Imported backfill sources will be sampled at the frequency of one sample for the first 100 CY, then one sample for the next 1,000 CY, then one sample for every subsequent 5,000 CY of soil imported from the same source (as long as the imported material appears to be consistent based upon observations of Amec's field representative). Imported backfill samples will be collected for the following parameters:

- TCL VOCs by USEPA SW-846 Method 8260;
- TCL SVOCs by USEPA SW-846 Method 8270;
- TAL Metals by USEPA SW-846 Method 6010;
- TCL Organochlorine Pesticides by 8081A; and
- PCBs by USEPA SW-846 Method 8082.

Results will be compared to the Commercial Use Allowable Constituent Level for Imported Fill or Soil in Appendix 5 of DER-10.

3.4.6 Backfill Methods and Final Grading

Building materials and soil utilized as backfill will be placed in one-foot lifts. Compaction of building materials and soil backfill will be detailed by the Site developer based upon future Site use. Final soil grading elevations are shown on Drawings C-115 and C-116 in **Appendix A**.

Final grading of the Site must transition to meet existing pavement or property boundaries without increasing the potential for erosion. To ensure that these requirements are met, the edges and transition zones will be constructed with a 5:1 slope over a five foot wide edge. The edges that will require sloping include any soil that encounters the Site boundaries. Portions of the southern and eastern Site boundaries will be tied into the final grades of the remediation activities associated with the Tract II Site. Sections of the existing chain link fence will be removed as necessary to facilitate final grading of the Site.

4.0 PERMITS AND OTHER AUTHORIZATIONS

4.1 SOIL EROSION AND SEDIMENTATION CONTROL PLAN

Soil erosion and sedimentation control notes are included with Site drawings in **Appendix A**. Drawings show the location of the siltation fence along with details of siltation fence installation. As a means to control Site surface water, a series of infiltration swales and storm sewers will be installed on the Site. The location of the infiltration swales, and storm sewers are shown on Drawings C-115 and C-116 in **Appendix A**. Erosion and sediment control installation notes along with inspection and maintenance notes are also included in **Appendix A**. During construction activities siltation fence will be constructed and maintained around the perimeter of the work activities. A formal Storm Water Pollution Prevention Plan for the work is under review by the City.

4.2 LOCAL PERMITS

Any local permits will be obtained prior to the start of work by Brightfields or its contractor. Specific permits required will be identified prior to the start of construction.

4.2.1 Storm Water Management Design Plans

Storm water management design plans are included in **Appendix A**, which include the planned location of storm sewer lines, catch basins, manholes, and infiltration swales. Details of these components are also shown in **Appendix A**. Analysis of the storm sewer system is detailed in the August 2012 Tract II Remedial Design Work Plan (Amec, August 2012).

4.3 HEALTH AND SAFETY

Amec has prepared a Site-specific HASP for the work, a copy of which can be found in Appendix A of the June 2012 IRM WP (Amec, June 2012). The HASP will be used by Amec employees and will address the potential hazards associated with the proposed work. The HASP has been prepared in accordance with Occupational Safety and Health Administration (OSHA) standards and includes an identification of the anticipated Site hazards, requirements for PPE and air monitoring, action levels for upgrading PPE levels, and emergency procedures. Brightfields will require that visitors to the Site, including client and regulatory agency personnel, comply with the Site HASP or provide their own HASP. Any remedial activities not included within the HASP will be addressed with task specific Activity Hazard Analysis (AHA) to determine safety risks.

4.4 COMMUNITY AIR MONITORING PLAN

A Site-specific Community Air Monitoring Plan (CAMP) was prepared for the work and is included in Appendix B of the June 2012 IRM WP (Amec, June 2012). The CAMP describes

measures to be taken during construction activities to monitor the Site perimeter for fugitive dust. The purpose of the CAMP is to provide a measure of protection for the downwind community (i.e., offsite receptors and on-site workers not directly involved with the subject work activities) from potential airborne contaminant releases resulting from remedial work activities to be conducted at the Site. Additionally, the CAMP provides data to confirm that remedial work activities have not spread contamination offsite via airborne emissions.

4.5 SITE MANAGEMENT PLAN

In accordance with DER-10, a Site Management Plan (SMP) will be developed following remedial Site activities to implement, document, and monitor the institutional controls on the Site. The institutional controls will include, but not limited to, deed restrictions to limit the Site use to commercial or industrial use.

5.0 SCHEDULE

The schedule for the Site includes the remedial design (RD), demolition activities, remediation activities, a SMP, and a Final Engineering Report (FER). The schedule indicates approximately 15 months are required for this work; beginning with Site mobilization an ending with the submittal of the FER. The anticipated schedule for submission of documents and field activities is listed below. Final "record" drawings will be submitted with the FER following the completion construction activities. The actual schedule may vary and will be dependent on, among other things, contractor availability, permitting, weather conditions, and regulatory approvals. The schedule is provided in Figure 13.

6.0 POST-CONSTRUCTION PLANS

6.1 ENGINEERING AND INSTITUTIONAL CONTROLS

Environmental Easements will restrict the Site to commercial or industrial purposes.

6.2 POST-REMEDIAL MONITORING

Post-remedial care of the Site will be included in the SMP, which will be submitted to the NYSDEC following the completion of remedial activities.

7.0 REFERENCES

Amec Environment & Infrastructure, Inc., May 2012, "Consolidated Remedial Investigation Report, Tract I Site, 3123 Highland Avenue, Niagara Falls, Niagara County, New York, Site No. 932131".

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TABLES

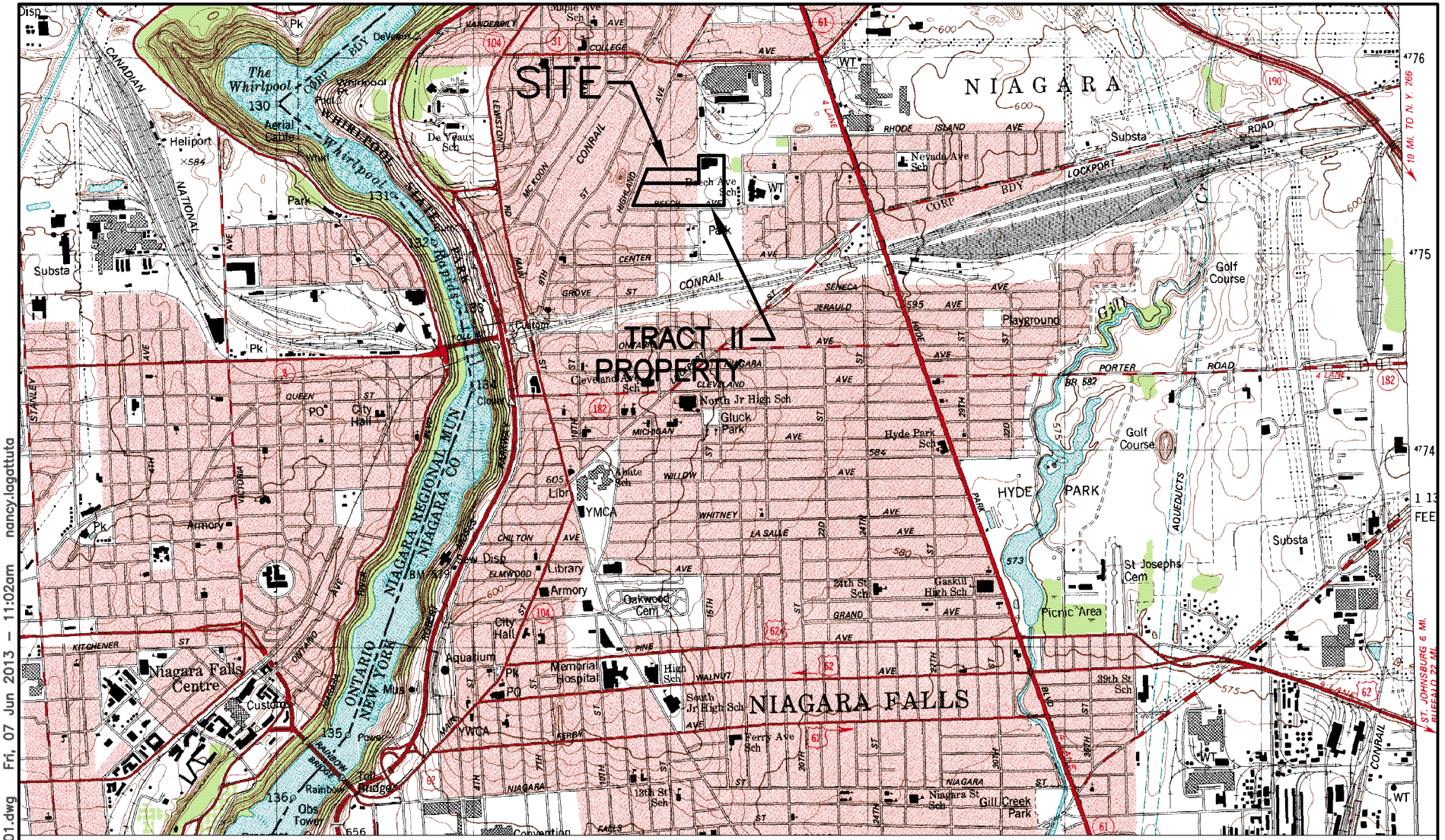
Table 1
Summary of Analyses: Tract I Confirmatory Samples
Tract I IRM WP Addendum

Number	Parameter(s)	Method(s)
1	Lead	SW-846 Method 6010B
2	Chromium	SW-846 Method 6010B
3	PCBs	SW-846 Method 8082
	Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Dibenz(a,h)anthracene, Indeno(1,2,3-cd)pyrene	SW-846 Method 8270C
4	Lead	SW-846 Method 6010B
	PCBs	SW-846 Method 8082
	Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Dibenz(a,h)anthracene, Indeno(1,2,3-cd)pyrene	SW-846 Method 8270C
5	PCBs	SW-846 Method 8082
6	Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Dibenz(a,h)anthracene, Indeno(1,2,3-cd)pyrene	SW-846 Method 8270C
7	Arsenic, Barium, Copper	SW-846 Method 6010B
8	Lead	SW-846 Method 6010B
	Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Dibenz(a,h)anthracene, Indeno(1,2,3-cd)pyrene	SW-846 Method 8270C
9	Lead	SW-846 Method 6010B
	Arsenic, Barium, Copper	SW-846 Method 6010B
	Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Dibenz(a,h)anthracene, Indeno(1,2,3-cd)pyrene	SW-846 Method 6010B
10	PCBs	SW-846 Method 8082
	Arsenic, Barium, Copper	SW-846 Method 6010B

Created By: SCC
Checked by: TPH

FIGURES

DRAWN BY: NEL 2-6-2012 APPROVED BY: ESW 4-11-2012



BRIGHTFIELDS, INC. TRACT I SITE NIAGARA FALLS, NEW YORK Project No.: 3410130921	amec MACTEC Engineering & Consulting Inc. Environment & Infrastructure 800 North Bell Avenue, Suite 200 Pittsburgh, Pennsylvania 15106	IRM WP ADDENDUM SITE LOCATION MAP Figure: 1	1

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HIGHLAND AVENUE
(70' WIDE)

TENNESSEE AVENUE
(66' WIDE)

APPROXIMATE LOCATION
OF UNDERGROUND
STORAGE TANKS

NATIONAL GRID PROPERTY (FIFTEENTH STREET R.O.W.)

TRACT II

LEGEND

- TRACT I PROPERTY BOUNDARY
- FORMER POWER CITY WAREHOUSE EXISTING CONCRETE SLAB
- FENCE

80 0 80
SCALE: 1"= 80'

BRIGHTFIELDS, INC.
TRACT I SITE
NIAGARA FALLS, NEW YORK

Project No.: 3410130921

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Pittsburgh, Pennsylvania 15106

IRM WP ADDENDUM
PLAN VIEW MAP OF SITE

Figure: 2

2

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HIGHLAND AVENUE (70' WIDE)

TENNESSEE AVENUE (66' WIDE)

STREET BOUNDARY

STREET BOUNDARY

577

576

575

574

T1-MW-01 577.57

TI-MW-01	8/9/12
Endrin	0.018 J
Gamma Chlordane	0.16
Total Sodium	42,000
Combined Total Iron and Total Manganese	550
Dissolved Sodium	42,700
Dissolved Manganese	340

T1-MW-02 576.31

TI-MW-02	8/9/12
Total Sodium	58,500
Combined Total Iron and Total Manganese	7,600
Total Lead	33
Dissolved Sodium	60,200
Dissolved Manganese	1,500

T1-MW-03 573.93

TI-MW-03	8/9/12
TCE	8.7
Beta Hexachlorocyclohexane	0.20
Total Antimony	21
Total Sodium	58,800
Combined Total Iron and Total Manganese	1,040
Total Lead	27
Dissolved Sodium	57,600
Dissolved Manganese	840
Dissolved Antimony	20

LEGEND

- PROPERTY BOUNDARY
- EXISTING STRUCTURE
- FENCE
- T1-MW-02 576.31 — MONITORING WELL GROUNDWATER ELEVATION
- 574 — GROUNDWATER CONTOUR (DASHED WHERE INFERRED)
- J — ESTIMATED VALUE

RESULTS REPORT IN µg/L

80 0 80

SCALE: 1"=80'

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IRM WP ADDENDUM
AUGUST 8, 2012
GROUNDWATER CONTOUR MAP
AND CONCENTRATIONS EXCEEDING
REFERENCE NYWQS VALUES
Figure: 3

3

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DRAWN BY: NEL 3-1-2013 APPROVED BY: SCC

LEGEND

- PROPERTY BOUNDARY
- EXISTING STRUCTURE
- FENCE
- T1-MW-02 MONITORING WELL
- B-25 AMEC SOIL BORING
- B-36 AMEC TEST PIT
- 10b E&E COMPOSITE SOIL SAMPLE LOCATION
- LINE CONNECTING SUBSAMPLES OF A COMPOSITE SAMPLE
- SB-02 EA SUBSURFACE SOIL SAMPLE LOCATION
- J ESTIMATED VALUE
- B COMPOUND DETECTED IN METHOD BLANK
- D DILUTED SAMPLE ANALYSIS RESULT

RESULTS REPORTED IN mg/kg
TCLP RESULTS REPORT IN mg/L

TENNESSEE AVENUE (66' WIDE)

B-20	7/14/2011
Surface Soil	0-0.5'
Lead	2,630

B-39	7/18/12
Surface Soil	0-0.5'
Lead	1,060

B-19	7/14/2011
Surface Soil	0-0.5'
Lead	1,730

B-18	7/14/2011
Surface Soil	0-0.5'
Lead	16,900
TCLP - Lead	69.7

T1-MW-03	8/1/12
Surface Soil	0-0.5'
Benzo(a)anthracene	7.8
Benzo(a)pyrene	10
Benzo(b)fluoranthene	16
Dibenzo(a,h)anthracene	0.680 J
Indeno(1,2,3-cd)pyrene	7.2
Arsenic	128
Barium	744
Copper	431
Lead	11,600

SS-PCW-07	5/1999
Composite, Surface Soil	0-0.5'
Sampled for: Lead	
Lead	178,000

SB-12	9/30/2008
Subsurface Soil	0-2'
Lead	1,160

SB-08	9/30/2008
Subsurface Soil	0-2'
Lead	9,410 J

B-27	2/21/13
Subslab Soil	0.5-1.0'
Lead	3,570 J

B-22	7/17/12
Surface Soil	0-0.5'
Benzo(a)pyrene	1.2 J
Arsenic	44.0
Copper	350
Lead	1,420
TCLP Lead	300

B-33	2/21/13
Subslab Soil	0.5-1.0'
Lead	25,000

T1-MW-02	7/24/12
Surface Soil	0-0.5'
Benzo(a)pyrene	2.0 J
Copper	634
Lead	10,100
TCLP Lead	62.4

B-10	7/14/2011
Surface Soil	0-0.5'
Lead	7,940
TCLP - Lead	18.4

SS-PCW-12	5/1999
Composite, Surface Soil	0-0.5'
Sampled for: SVOC, Pest/PCB, Lead	
Benzo(a)anthracene	6.5 D
Benzo(b)fluoranthene	6.3 D
Benzo(a)pyrene	6.5 D
Dibenzo(a,h)anthracene	0.82 J
Lead	2,790

B-23	7/17/12
Surface Soil	0-0.5'
Benzo(a)pyrene	1.1 J
Lead	9,340
TCLP Lead	69.1

SS-PCW-11	5/1999
Composite, Surface Soil	0-05'
Sampled for: SVOC, Pest/PCB, Lead	
Benzo(a)pyrene	2 J
Aroclor-1260	3.8 J
Lead	8,240

B-11	7/14/2011
Surface Soil	0-0.5'
Lead	6,430
TCLP - Lead	46.5

B-12	7/14/2011
Surface Soil	0-0.5'
Lead	3,130

B-24	7/17/12
Surface Soil	0-0.5'
Benzo(a)anthracene	9.9
Benzo(a)pyrene	8.2
Benzo(b)fluoranthene	12
Dibenzo(a,h)anthracene	1.1 J

B-13	7/14/2011
Surface Soil	0-0.5'
Lead	4,130

B-14	7/14/2011
Surface Soil	0-0.5'
Lead	1,210

B-25	7/17/12
Surface Soil	0-0.5'
Benzo(a)pyrene	3.1 J
Barium	419

B-15	7/14/2011
Surface Soil	0-0.5'
Lead	1,660

SS-PCW-04	5/1999
Grab, Surface Soil	0-0.5'
Sampled for: Lead	
Lead	11,300

B-26	7/18/12
Surface Soil	0-0.5'
Arsenic	103.0
Lead	1,260

SB-22	10/1/2008
Subsurface Soil	0-2'
Arsenic	40.40
Copper	421
Lead	2,160

SS-PCW-09	5/1999
Composite, Debris/Surface Soil	0-0.5'
Sampled for: SVOC, Pest/PCB, Lead	
Benzo(a)anthracene	29
Benzo(b)fluoranthene	35 J
Benzo(a)pyrene	31 J
Indeno(1,2,3-cd)pyrene	7.5 J
Dibenzo(a,h)anthracene	2.7 J
Aroclor-1254	17
Lead	31,800

B-36	7/24/12
Surface Soil	0-0.5'
Benzo(a)anthracene	57
Benzo(a)pyrene	59
Benzo(b)fluoranthene	84
Dibenzo(a,h)anthracene	2.4 J
Indeno(1,2,3-cd)pyrene	20
Arsenic	45.1
Lead	9,550
TCLP Lead	20.4

B-17	7/14/2011
Surface Soil	0-0.5'
Lead	2,280
TCLP - Lead	21

B-35	7/24/12
Surface Soil	0-0.5'
Benzo(a)anthracene	42
Benzo(a)pyrene	46
Benzo(b)fluoranthene	61
Dibenzo(a,h)anthracene	3.3 J
Indeno(1,2,3-cd)pyrene	16
Arsenic	19.7
Lead	4,390
TCLP Lead	8.5

SB-11	9/30/2008
Subsurface Soil	0-2'
Chromium	2,060 J

B-16	7/14/2011
Surface Soil	0-0.5'
Lead	1,230

80 0 80
SCALE: 1"=80'

BRIGHTFIELDS, INC.
TRACT I SITE
NIAGARA FALLS, NEW YORK

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IRM WP ADDENDUM
EA, E&E AND AMEC
SURFACE, SUB-SLAB AND SHALLOW
SUBSURFACE SOIL SAMPLE RESULTS
DETECTED ABOVE COMMERCIAL SCOs
AND TCLP STANDARDS

Figure: 4

4

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HIGHLAND AVENUE (70' WIDE)

TENNESSEE AVENUE (66' WIDE)

STREET BOUNDARY

STREET BOUNDARY

B-22 7/17/12

Subsurface Soil	6.5-7.0'
Lead	6,710
TCLP Lead	50.2

B-23 7/17/12

Subsurface Soil	5.5-6.0'
Lead	1,450
TCLP Lead	13.1

T1-MW-03 8/1/12

Subsurface Soil	1.5-2.0'
Lead	1,340

B-36 7/24/12

Subsurface Soil	1.5-2.0'
Lead	6,490

T1-MW-02 7/24/12

Subsurface Soil	1-1.5'
Lead	4,570

LEGEND

- PROPERTY BOUNDARY
- EXISTING STRUCTURE
- FENCE
- T1-MW-02 MONITORING WELL
- B-25 AMEC SOIL BORING
- B-36 AMEC TEST PIT
- SB-02 EA SUBSURFACE SOIL SAMPLE LOCATION

RESULTS REPORTED IN mg/kg
TCLP RESULTS REPORT IN mg/L

80 0 80
SCALE: 1"=80'

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IRM WP ADDENDUM
EA AND AMEC SUBSURFACE SOIL SAMPLE RESULTS DETECTED ABOVE COMMERCIAL SCOs AND TCLP STANDARDS
Figure: 5

5

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HIGHLAND AVENUE
(70' WIDE)

TENNESSEE AVENUE
(66' WIDE)

STREET BOUNDARY

STREET BOUNDARY

BB3

BB5

BB2

BB7

BB4

BB7	2/26/13
AROCLOR 1254	1.7 J

BB4	2/26/13
Lead	4,090 J
TCLP Lead	116 J
AROCLOR 1254	1.7 J
AROCLOR 1260	1.3 J

LEGEND

- PROPERTY BOUNDARY
- EXISTING STRUCTURE
- FENCE
- BB4 BRICK BEDDING MATERIAL SAMPLE LOCATION
- AREA REPORTED BY EA(2009) TO CONTAIN BRICK FLOOR OVER CONCRETE SUBFLOOR
- AREA OBSERVED BY AMEC(2013) TO ACTUALLY CONTAIN BRICK FLOOR OVER CONCRETE SUBFLOOR
- J ESTIMATED VALUE

RESULTS REPORTED IN mg/kg
TCLP RESULTS REPORT IN mg/L

80 0 80
SCALE: 1"=80'

BRIGHTFIELDS, INC.
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IRM WP ADDENDUM
BRICK BEDDING MATERIAL
SAMPLE LOCATIONS AND
RESULTS DETECTED ABOVE
COMMERCIAL SCOs

Figure: 6

6

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LEGEND

- PROPERTY BOUNDARY
- EXISTING STRUCTURE
- FENCE
- TCLP LEAD <5 mg/L AND TOTAL LEAD >1000 mg/kg
- TCLP LEAD >5 mg/L OR ASSUMED >5 mg/L AND TOTAL LEAD >1000 mg/kg
- CHROMIUM >110 mg/kg
- EXCAVATION AREA 1
- EXCAVATION AREA 2
- EXCAVATION AREA 3
- EXCAVATION AREA 4
- TARGET EXCAVATION AREA

TOTAL LEAD REPORTED IN mg/kg
TCLP LEAD REPORTED IN mg/L

- T1-MW-02 MONITORING WELL LOCATION
- B-25 AMEC SOIL BORING LOCATION
- B-36 AMEC TEST PIT LOCATION
- 10b E&E COMPOSITE SOIL SAMPLE LOCATION
- LINE CONNECTING SUBSAMPLES OF A COMPOSITE SAMPLE
- SB-02 EA SUBSURFACE SOIL SAMPLE LOCATION

B-31	2/21/13
Subslab Soil	0.5-1.0'
Lead	9.0

T1-MW-01	7/18/2012
Subslab Soil	0.5-1.0'
Lead	180

SB-08	9/30/2008
Subsurface Soil	0-2.0'
Lead	9,410 J

B-27	2/21/13
Subslab Soil	0.5-1.0'
Lead	3,570 J
TCLP - Lead	1.3 J

SB-09	9/30/2008
Subsurface Soil	0-2.0'
Lead	9.90

B-30	2/21/13
Subslab Soil	1.0-1.5'
Lead	47.0

SB-10	9/30/2008
Subsurface Soil	0-2.0'
Lead	52.50

SB-07	9/30/2008
Subsurface Soil	0-2.0'
Lead	55.0

SS-PCW-07	5/1999
Composite, Surface Soil	0-0.5'
Sampled for: Lead	
Lead	178,000

SB-01	9/30/2008
Subsurface Soil	0-2.0'
Lead	34.0

SB-02	9/30/2008
Subsurface Soil	0-2.0'
Lead	6.0

SB-03	9/30/2008
Subsurface Soil	0-2.0'
Lead	45.0

SB-14	9/30/2008
Subsurface Soil	0-2.0'
Lead	15.70

B-20	7/14/2011
Surface Soil	0-0.5'
Lead	2,630
TCLP - Lead	1.8

B-39	7/18/2012
Surface Soil	0-0.5'
Lead	1,060
TCLP - Lead	0.073

B-19	7/14/2011
Surface Soil	0-0.5'
Lead	1,730
TCLP - Lead	0.6

B-38	7/18/2012
Surface Soil	0-0.5'
Lead	362

SB-15	9/30/2008
Subsurface Soil	0-2.0'
Lead	14.80

SB-16	9/30/2008
Subsurface Soil	0-2.0'
Lead	5.30

SB-04	9/30/2008
Subsurface Soil	0-2.0'
Lead	20.70

B-18	7/14/2011
Surface Soil	0-0.5'
Lead	16,900
TCLP - Lead	69.7

T1-MW-03	8/1/2012
Surface Soil	0-0.5'
Lead	11,600
Subsurface Soil	1.5-2.0'
Lead	1,340

SB-22	10/1/2008
Subsurface Soil	0-2.0'
Lead	2,160

SS-PCW-09	5/1999
Composite, Debris/Surface Soil	0-0.5'
Sampled for: SVOC, Pest/PCB, Lead	
Lead	31,800

SB-05	9/30/2008
Subsurface Soil	0-2.0'
Lead	5.60

B-36	7/24/2012
Surface Soil	0-0.5'
Lead	9,550
TCLP - Lead	20.4
Subsurface Soil	1.5-2.0'
Lead	6,490
TCLP - Lead	0.23

B-17	7/14/2011
Surface Soil	0-0.5'
Lead	2,280
TCLP - Lead	21

SB-06	9/30/2008
Subsurface Soil	0-2.0'
Lead	18.0

B-34	2/21/13
Subslab Soil	0.5-1.0'
Lead	26.3

B-35	7/24/2012
Surface Soil	0-0.5'
Lead	4,390
TCLP - Lead	8.5
Subsurface Soil	1.5-2.0'
Lead	431

SB-23	9/30/2008
Subsurface Soil	0-2.0'
Lead	8.80

B-16	7/14/2011
Surface Soil	0-0.5'
Lead	1,230
TCLP - Lead	1.3

B-32	2/21/13
Subslab Soil	0.5-1.0'
Lead	165

SB-11	9/30/2008
Subsurface Soil	0-2.0'
Lead	0.48

SB-12	9/30/2008
Subsurface Soil	0-2.0'
Lead	1,160

B-29	2/21/13
Subslab Soil	0.5-1.0'
Lead	27.6

B-28	2/21/13
Subslab Soil	0.5-1.0'
Lead	48.7

B-22	7/17/2012
Surface Soil	0-0.5'
Lead	1,420
TCLP - Lead	300

SB-13	9/30/2008
Subsurface Soil	0-2.0'
Lead	24.0

B-33	2/21/13
Subslab Soil	0.5-1.0'
Lead	25,000

SB-19	9/30/2008
Subsurface Soil	0-2.0'
Lead	ND

SB-18	9/30/2008
Subsurface Soil	0-2.0'
Lead	15.60

SB-17	9/30/2008
Subsurface Soil	0-2.0'
Lead	5.30

SS-PCW-04	5/1999
Grab, Surface Soil	0-0.5'
Lead	11,300

B-26	7/18/2012
Surface Soil	0-0.5'
Lead	1,260
TCLP - Lead	0.48

B-10	7/14/2011
Surface Soil	0-0.5'
Lead	7,940
TCLP - Lead	18.4

SS-PCW-12	5/1999
Composite, Surface Soil	0-0.5'
Lead	2,790

B-23	7/17/2012
Surface Soil	0-0.5'
Lead	9,340
TCLP - Lead	69.1

B-11	7/14/2011
Surface Soil	0-0.5'
Lead	6,430
TCLP - Lead	46.5

SS-PCW-11	5/1999
Composite, Surface Soil	0-05'
Sampled for: SVOC, Pest/PCB, Lead	
Lead	8,240

SB-21	9/30/2008
Subsurface Soil	0-2.0'
Lead	247

B-12	7/14/2011
Surface Soil	0-0.5'
Lead	3,130
TCLP - Lead	1.5

SB-20	9/30/2008
Subsurface Soil	0-2.0'
Lead	11.80

B-24	7/17/2012
Surface Soil	0-0.5'
Lead	653

B-13	7/14/2011
Surface Soil	0-0.5'
Lead	4,130
TCLP - Lead	2.7

B-14	7/14/2011
Surface Soil	0-0.5'
Lead	1,210
TCLP - Lead	1.0

B-15	7/14/2011
Surface Soil	0-0.5'
Lead	1,660
TCLP - Lead	1.9

B-25	7/17/2012
Surface Soil	0-0.5'
Lead	962

T1-MW-02	7/24/2012
Surface Soil	0-0.5'
Lead	10,100
TCLP - Lead	62.4
Subsurface Soil	1.0-1.5'
Lead	4,570
TCLP - Lead	1.3

80 0 80
SCALE: 1"=80'

BRIGHTFIELDS, INC.
TRACT I SITE
NIAGARA FALLS, NEW YORK

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IRM WP ADDENDUM
SURFACE (0-2 FEET)
LEAD CONCENTRATION
AND EXCAVATION AREAS

Figure:7

7

Z:\E & E\CADD\Niagara Falls IRM WP\Figs 7 8 11.dwg Fri, 07 Jun 2013 - 1:39pm nancy.lagattuta

DRAWN BY: NEL 3-22-2013 APPROVED BY: –

LEGEND

- PROPERTY BOUNDARY
- EXISTING STRUCTURE
- FENCE
- T1-MW-02 MONITORING WELL LOCATION
- B-25 AMEC SOIL BORING LOCATION
- 2-6' TCLP LEAD >5 mg/L AND TOTAL LEAD >1000 mg/kg
- 2-8' TCLP LEAD >5 mg/L AND TOTAL LEAD >1000 mg/kg
- EXCAVATION AREA 1

TOTAL LEAD REPORTED IN mg/kg
TCLP LEAD REPORTED IN mg/L

HIGHLAND AVE (70' WIDE)

TENNESSEE AVENUE (66' Wide)

STREET BOUNDARY

STREET BOUNDARY

B-39	7/18/2012
Subsurface Soil	2.5-3.0'
Lead	20.2

B-30	2/21//2013
Subsurface Soil	3.5-4.0'
Lead	15.6

B-32	2/21//2013
Subsurface Soil	6.5-7.0'
Lead	12.8

B-29	2/21//2013
Subsurface Soil	7.0-7.5'
Lead	9.7

B-28	2/21//2013
Subsurface Soil	7.0-7.5'
Lead	8.6

B-22	7/17/2012
Subsurface Soil	6.5-7.0'
Lead	6,710
TCLP - Lead	50.2

B-33	2/21//2013
Subsurface Soil	5.0-5.5'
Lead	204

B-23	7/17/2012
Subsurface Soil	5.5-6.0'
Lead	1,450
TCLP - Lead	13.1

B-24	7/17/2012
Subsurface Soil	6.5-7.0'
Lead	37.5

B-38	7/18/2012
Subsurface Soil	3.5-4.0'
Lead	17.61

B-26	7/18/2012
Subsurface Soil	4.0-4.5'
Lead	347

B-25	7/17/2012
Subsurface Soil	4.5-5.0'
Lead	672

80 0 80
SCALE: 1"=80'

BRIGHTFIELDS, INC.
TRACT I SITE
NIAGARA FALLS, NEW YORK

Project No.: 3410130921

amec MACTEC Engineering & Consulting Inc.

Environment & Infrastructure
800 North Bell Avenue, Suite 200
Pittsburgh, Pennsylvania 15106

IRM WP ADDENDUM
SUBSURFACE (2-8 FEET)
LEAD CONCENTRATION AND
EXCAVATION AREAS

Figure:8

8

Z:\E & E\CADD\Niagara Falls IRM WP\Figs 7 8 11.dwg Fri, 07 Jun 2013 - 2:34pm nancy.lagattuta

DRAWN BY: NEL 4-5-2013 APPROVED BY: SCC

LEGEND

- PROPERTY BOUNDARY
- EXISTING STRUCTURE
- FENCE
- T1-MW-02 MONITORING WELL
- PAHs > RESPECTIVE COMMERCIAL SCO
- OTHER (NON-LEAD) METALS AND PAHs > RESPECTIVE COMMERCIAL SCO
- PAHs AND PCBs > RESPECTIVE COMMERCIAL SCO
- CHROMIUM > 110 mg/kg
- B-25 AMEC SOIL BORING
- B-36 AMEC TEST PIT
- 10b E&E COMPOSITE SOIL SAMPLE LOCATION
- LINE CONNECTING SUBSAMPLES OF A COMPOSITE SAMPLE
- SB-02 EA SUBSURFACE SOIL SAMPLE LOCATION
- J ESTIMATED VALUE
- B COMPOUND DETECTED IN METHOD BLANK
- D DILUTED SAMPLE ANALYSIS RESULT

RESULTS REPORTED IN mg/kg
TCLP RESULTS REPORT IN mg/L

TENNESSEE AVENUE (66' WIDE)

B-20	7/14/2011
Surface Soil	0-0.5'
Lead	2,630

B-39	7/18/12
Surface Soil	0-0.5'
Lead	1,060

B-19	7/14/2011
Surface Soil	0-0.5'
Lead	1,730

B-18	7/14/2011
Surface Soil	0-0.5'
Lead	16,900
TCLP - Lead	69.7

T1-MW-03	8/1/12
Surface Soil	0-0.5'
Benzo(a)anthracene	7.8
Benzo(a)pyrene	10
Benzo(b)fluoranthene	16
Dibenzo(a,h)anthracene	0.680 J
Indeno(1,2,3-cd)pyrene	7.2
Arsenic	128
Barium	744
Copper	431
Lead	11,600

SS-PCW-07	5/1999
Composite, Surface Soil	0-0.5'
Sampled for: Lead	
Lead	178,000

B-27	2/21/13
Subslab Soil	0.5-1.0'
Lead	3,570 J

SB-08	9/30/2008
Subsurface Soil	0-2'
Lead	9,410 J

SB-12	9/30/2008
Subsurface Soil	0-2'
Lead	1,160

B-22	7/17/12
Surface Soil	0-0.5'
Benzo(a)pyrene	1.2 J
Arsenic	44.0
Copper	350
Lead	1,420
TCLP Lead	300

B-33	2/21/13
Subslab Soil	0.5-1.0'
Lead	25,000

B-10	7/14/2011
Surface Soil	0-0.5'
Lead	7,940
TCLP - Lead	18.4

T1-MW-02	7/24/12
Surface Soil	0-0.5'
Benzo(a)pyrene	2.0 J
Copper	634
Lead	10,100
TCLP Lead	62.4

SS-PCW-12	5/1999
Composite, Surface Soil	0-0.5'
Sampled for: SVOC, Pest/PCB, Lead	
Benzo(a)anthracene	6.5 D
Benzo(b)fluoranthene	6.3 D
Benzo(a)pyrene	6.5 D
Dibenzo(a,h)anthracene	0.82 J
Lead	2,790

B-23	7/17/12
Surface Soil	0-0.5'
Benzo(a)pyrene	1.1 J
Lead	9,340
TCLP Lead	69.1

SS-PCW-11	5/1999
Composite, Surface Soil	0-05'
Sampled for: SVOC, Pest/PCB, Lead	
Benzo(a)pyrene	2 J
Aroclor-1260	3.8 J
Lead	8,240

B-11	7/14/2011
Surface Soil	0-0.5'
Lead	6,430
TCLP - Lead	46.5

B-12	7/14/2011
Surface Soil	0-0.5'
Lead	3,130

B-24	7/17/12
Surface Soil	0-0.5'
Benzo(a)anthracene	9.9
Benzo(a)pyrene	8.2
Benzo(b)fluoranthene	12
Dibenzo(a,h)anthracene	1.1 J

B-13	7/14/2011
Surface Soil	0-0.5'
Lead	4,130

B-14	7/14/2011
Surface Soil	0-0.5'
Lead	1,210

B-25	7/17/12
Surface Soil	0-0.5'
Benzo(a)pyrene	3.1 J
Barium	419

B-15	7/14/2011
Surface Soil	0-0.5'
Lead	1,660

SS-PCW-09	5/1999
Composite, Debris/Surface Soil	0-0.5'
Sampled for: SVOC, Pest/PCB, Lead	
Benzo(a)anthracene	29
Benzo(b)fluoranthene	35 J
Benzo(a)pyrene	31 J
Indeno(1,2,3-cd)pyrene	7.5 J
Dibenzo(a,h)anthracene	2.7 J
Aroclor-1254	17
Lead	31,800

B-36	7/24/12
Surface Soil	0-0.5'
Benzo(a)anthracene	57
Benzo(a)pyrene	59
Benzo(b)fluoranthene	84
Dibenzo(a,h)anthracene	2.4 J
Indeno(1,2,3-cd)pyrene	20
Arsenic	45.1
Lead	9,550
TCLP Lead	20.4

B-35	7/24/12
Surface Soil	0-0.5'
Benzo(a)anthracene	42
Benzo(a)pyrene	46
Benzo(b)fluoranthene	61
Dibenzo(a,h)anthracene	3.3 J
Indeno(1,2,3-cd)pyrene	16
Arsenic	19.7
Lead	4,390
TCLP Lead	8.5

SS-PCW-04	5/1999
Grab, Surface Soil	0-0.5'
Sampled for: Lead	
Lead	11,300

B-26	7/18/12
Surface Soil	0-0.5'
Benzo(a)pyrene	1.9B
Arsenic	103.0
Lead	1,260

SB-22	10/1/2008
Subsurface Soil	0-2'
Arsenic	40.40
Copper	421
Lead	2,160

B-17	7/14/2011
Surface Soil	0-0.5'
Lead	2,280
TCLP - Lead	21

SB-11	9/30/2008
Subsurface Soil	0-2'
Chromium	2,060 J

B-16	7/14/2011
Surface Soil	0-0.5'
Lead	1,230

80 0 80
SCALE: 1"=80'

BRIGHTFIELDS, INC.
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Pittsburgh, Pennsylvania 15106

IRM WP ADDENDUM
OTHER COMPOUNDS DETECTED ABOVE RESPECTIVE COMMERCIAL SCO

Figure: 9

9

Z:\E & E\CADD\Niagara Falls IRM WP\Figs 9-10Excavation Areas.dwg Fri, 07 Jun 2013 - 1:41pm nancy.lagattuta

DRAWN BY: NEL 4-5-2013 APPROVED BY: SCC

LEGEND

- PROPERTY BOUNDARY
- EXISTING STRUCTURE
- FENCE
- TCLP LEAD < 5 mg/L AND TOTAL LEAD >1000 mg/kg
- TCLP LEAD > 5 mg/L OR ASSUMED > 5mg/L AND TOTAL LEAD >1000 mg/kg
- PAHs > RESPECTIVE COMMERCIAL SCO
- OTHER (NON-LEAD) METALS AND PAHs > RESPECTIVE COMMERCIAL SCO
- PAHs AND PCBs > RESPECTIVE COMMERCIAL SCO
- CHROMIUM > 110 mg/kg
- EXCAVATION AREA 1
- EXCAVATION AREA 2
- EXCAVATION AREA 3
- EXCAVATION AREA 4
- TARGET EXCAVATION AREA

TENNESSEE AVENUE (66' WIDE)

HIGHLAND AVENUE (70' WIDE)

STREET BOUNDARY

80 0 80

SCALE: 1"=80'

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IRM WP ADDENDUM
SUMMARY OF SURFACE (0-2 FEET)
EXCAVATION AREAS

Figure: 10

10

Z:\E & E\CADD\Niagara Falls IRM WP\Figs 9-10Excavation Areas.dwg Fri, 07 Jun 2013 - 1:41pm nancy.lagattuta

DRAWN BY: NEL 6-13-2013 APPROVED BY: SCC

LEGEND

- PROPERTY BOUNDARY
- EXISTING STRUCTURE
- FENCE
- TCLP LEAD < 5 mg/L AND TOTAL LEAD >1000 mg/Kg
- TCLP LEAD > 5 mg/L OR ASSUMED > 5mg/L AND TOTAL LEAD >1000 mg/Kg
- PAHs > RESPECTIVE COMMERCIAL SCO
- METALS AND PAHs > RESPECTIVE COMMERCIAL SCO
- PAHs AND PCBs > RESPECTIVE COMMERCIAL SCO
- CHROMIUM > 110 mg/Kg
- EXCAVATION AREA 1
- EXCAVATION AREA 2
- EXCAVATION AREA 3
- EXCAVATION AREA 4
- TARGET EXCAVATION AREA
- PROPOSED LOCATION OF SIDEWALL CONFIRMATORY SAMPLE
- PROPOSED LOCATION OF BASE CONFIRMATORY SAMPLE

SAMPLE LOCATION NUMBER INDICATES ANALYSIS. REFER TO ATTACHED TABLE FOR CLARIFICATION.

TENNESSEE AVENUE (66' WIDE)

HIGHLAND AVENUE (70' WIDE)

STREET BOUNDARY

NOTE

SAMPLE LOCATIONS ARE SUBJECT TO CHANGE BASED ON FIELD CONDITIONS.

80 0 80

SCALE: 1"=80'

BRIGHTFIELDS, INC.
TRACT I SITE
NIAGARA FALLS, NEW YORK

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APPROXIMATE
LOCATION OF PROPOSED
CONFIRMATORY SAMPLES
0-2 FEET

Figure: 11

11

P:\PROJECTS\Honeywell\Niagara Falls\3410110832\CADD\FINAL\Tract I\IRM WP 2013_04\Proposed Confirmatory Samples-Surface.dwg Tue, 09 Jul 2013 - 2:21pm nancy.lagattuta

DRAWN BY: NEL 6-13-2013 APPROVED BY: SCC

LEGEND

- PROPERTY BOUNDARY
- EXISTING STRUCTURE
- FENCE
- 2-6' TCLP LEAD >5 mg/L AND TOTAL LEAD >1000 mg/Kg
- 2-8' TCLP LEAD >5 mg/L AND TOTAL LEAD >1000 mg/Kg
- EXCAVATION AREA 1
- PROPOSED LOCATION OF SIDEWALL CONFIRMATORY SAMPLE
- PROPOSED LOCATION OF BASE CONFIRMATORY SAMPLE

SAMPLE LOCATION NUMBER INDICATES ANALYSIS.
REFER TO ATTACHED TABLE FOR CLARIFICATION.

HIGHLAND AVENUE (70' WIDE)

STREET BOUNDARY

TENNESSEE AVENUE (66' WIDE)

NOTE

SAMPLE LOCATIONS ARE SUBJECT TO CHANGE BASED ON FIELD CONDITIONS.

80 0 80
SCALE: 1"=80'

BRIGHTFIELDS, INC.
TRACT I SITE
NIAGARA FALLS, NEW YORK

Project No.: 3410130921

amec MACTEC Engineering & Consulting Inc.

Environment & Infrastructure
800 North Bell Avenue, Suite 200
Pittsburgh, Pennsylvania 15106

APPROXIMATE
LOCATION OF PROPOSED
CONFIRMATORY SAMPLES
2-8 FEET

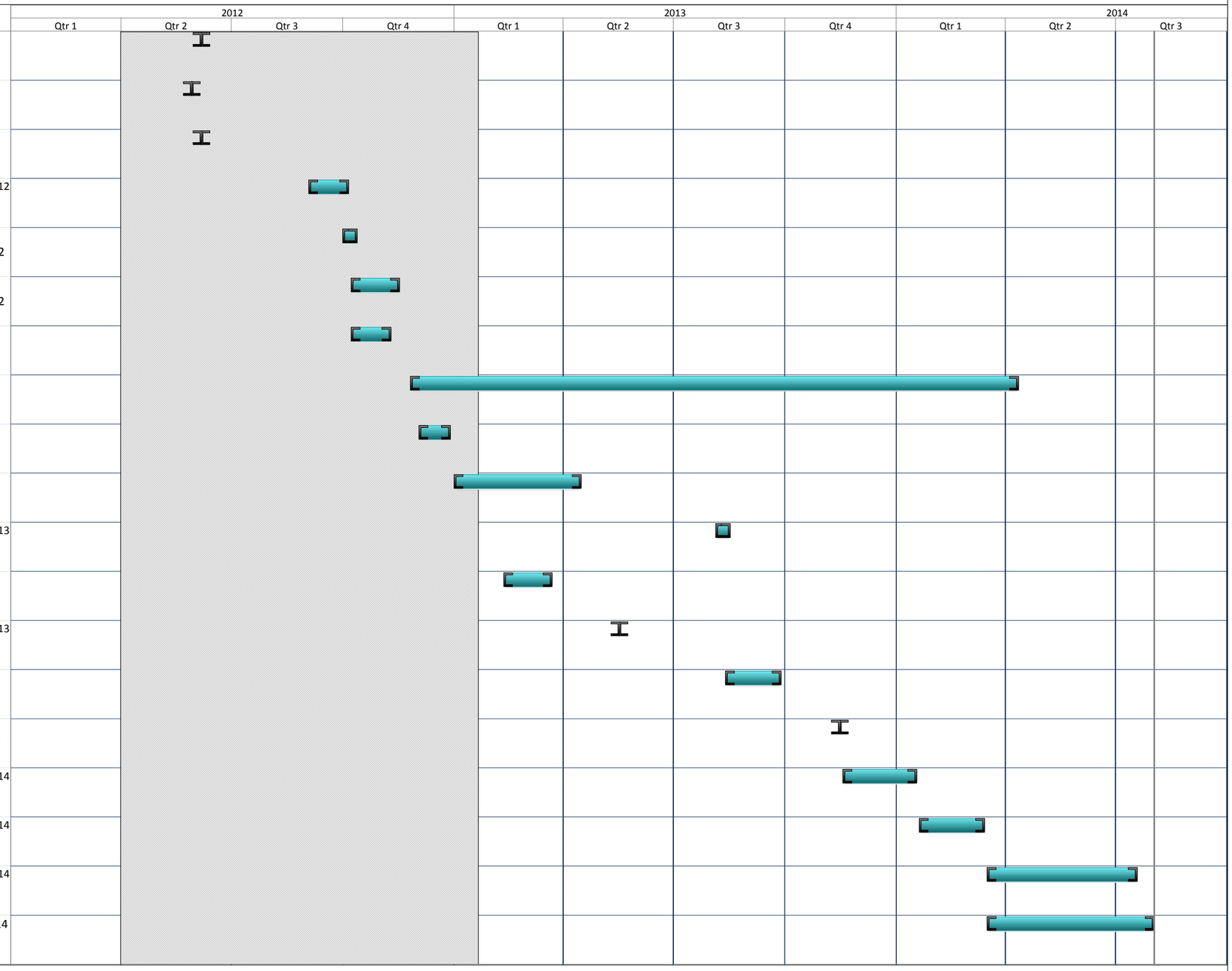
Figure: 12

12

P:\PROJECTS\Honeywell\Niagara Falls\3410110832\CADD\FINAL\Tract I\RM WP 2013_04\Proposed Confirmatory Samples-Subsurface.dwg Tue, 09 Jul 2013 - 2:31pm nancy.lagattuta

Figure 13
Tract I IRM Project Schedule

ID	Task Name	Duration	Start	Finish
1	IRM Work Plan Submittal	1 day	Wed 6/6/12	Wed 6/6/12
2	Supplemental RI WP Submittal	1 day	Tue 5/29/12	Tue 5/29/12
3	CAMP Submittal	1 day	Wed 6/6/12	Wed 6/6/12
4	Property Acquisition	25 days	Mon 9/3/12	Fri 10/5/12
5	Building Demolition Mobilization	10 days	Mon 10/1/12	Fri 10/12/12
6	Tract I and II Site Prep	30 days	Mon 10/8/12	Fri 11/16/12
7	Background Air Sampling	25 days	Mon 10/8/12	Fri 11/9/12
8	Construction Air Monitoring	360 days	Mon 11/26/12	Fri 4/11/14
9	Asbestos Abatement	20 days	Mon 12/3/12	Fri 12/28/12
10	Power City Warehouse Building Demo	75 days	Tue 1/1/13	Mon 4/15/13
11	UST Removal	10 days	Mon 8/5/13	Fri 8/16/13
12	Tract I Supplemental Investigation	30 days	Mon 2/11/13	Fri 3/22/13
13	Tract I Supplemental RI Report	1 day	Fri 5/17/13	Fri 5/17/13
14	Tract I IRM Activities	34 days	Tue 8/13/13	Fri 9/27/13
15	AAR Submittal	1 day	Fri 11/15/13	Fri 11/15/13
16	AAR Public Comment Period	45 days	Mon 11/18/13	Fri 1/17/14
17	Site Management Plan Preparation/Submittal	40 days	Mon 1/20/14	Fri 3/14/14
18	Final Engineering Report Preparation/Submittal	90 days	Mon 3/17/14	Fri 7/18/14
19	Site Redevelopment Plan	100 days	Mon 3/17/14	Fri 8/1/14



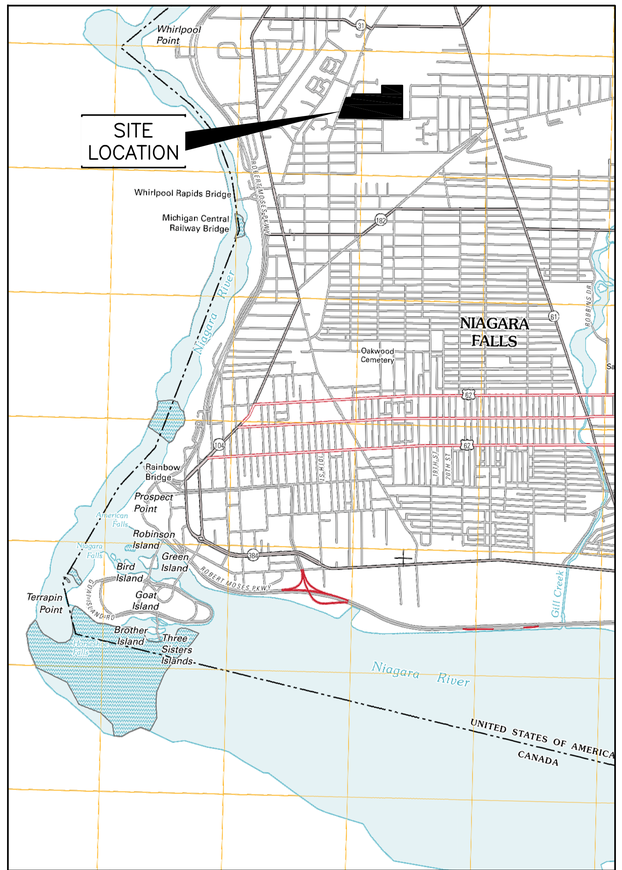
Project: Tract I IRMWP Schedule
Date: Thu 8/8/13

Manual Task

APPENDIX A

Tracts I and II Remedial Design Drawings

HONEYWELL
100% REMEDIAL DESIGN DRAWINGS
TRACTS I AND II HIGHLAND AVENUE
NIAGARA FALLS, NEW YORK
AUGUST 2013



LOCUS MAP

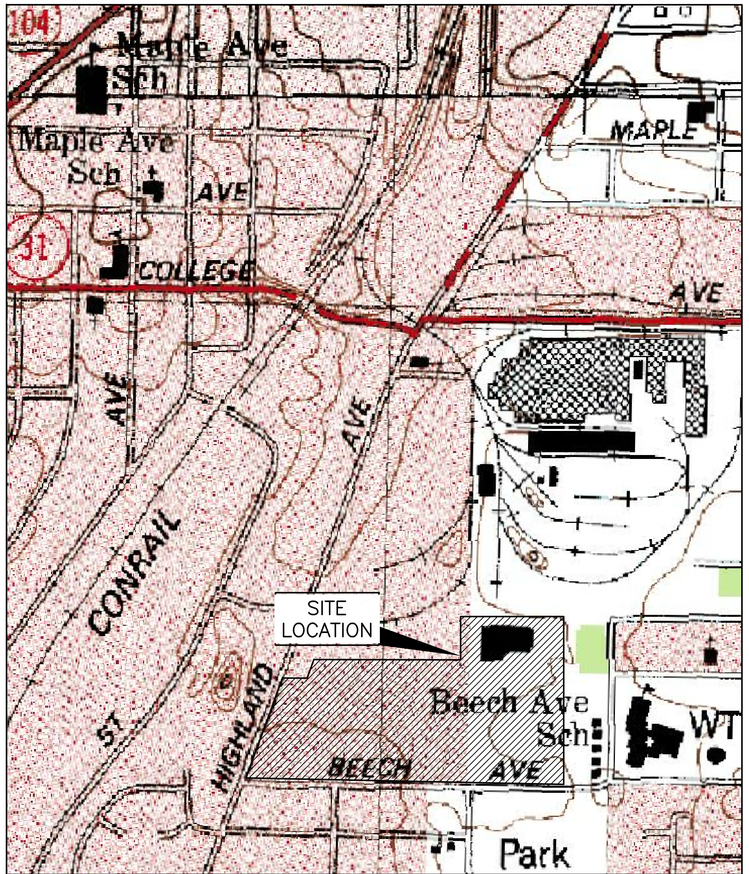
0 500 1000 2000

SCALE IN FEET

DRAWING INDEX

INCLUDED THIS SUBMITTAL	SHEET NUMBER	DRAWING TITLE	DISCIPLINE NUMBER
•	1	COVER SHEET	G–001
•	2	GENERAL NOTES LEGEND AND ABBREVIATIONS	G–002
•	3	GENERAL PROJECT SPECIFICATIONS	G–003
•	4	GENERAL PROJECT SPECIFICATIONS	G–004
•	5	EXISTING CONDITIONS PLAN	C–101
•	6	EXISTING CONDITIONS PLAN	C–102
•	7	GENERAL REMEDY PLAN	C–103
•	8	OVERALL ACCESS AND STAGING PLAN	C–104
o	9	DEMOLITION PLAN (NOT INCLUDED TRACT II SPECIFIC)	C–105
o	10	TRACT II TENORM EXCAVATION LIMITS (NOT INCLUDED TRACT II SPECIFIC)	C–106
o	11	TRACT II ISOLATED EXCAVATION PLAN (NOT INCLUDED TRACT II SPECIFIC)	C–107
o	12	TRACT II EXCAVATION PLAN INTERVAL 1 (NOT INCLUDED TRACT II SPECIFIC)	C–108
o	13	TRACT II EXCAVATION PLAN INTERVAL 2 (NOT INCLUDED TRACT II SPECIFIC)	C–109
o	14	TRACT II BORROW PIT EXCAVATION PLAN (NOT INCLUDED TRACT II SPECIFIC)	C–110
•	15	TRACT I EXCAVATION PLAN 0 TO 2 FEET BGS	C–111
•	16	TRACT I EXCAVATION PLAN 2 TO 4 FEET BGS	C–112
•	17	TRACT I EXCAVATION PLAN 4 TO 6 FEET BGS	C–113
•	18	TRACT I EXCAVATION PLAN 6 TO 8 FEET BGS	C–114
•	19	FINAL GRADE AND EROSION AND SEDIMENT CONTROL PLAN	C–115
•	20	FINAL GRADE AND EROSION AND SEDIMENT CONTROL PLAN	C–116
•	21	FINAL SURFACING PLAN	C–117
•	22	CROSS SECTION PLAN	C–118
•	23	CROSS SECTIONS	C–119
•	24	CROSS SECTIONS	C–120
•	25	EROSION AND SEDIMENT CONTROL NOTES	C–301
•	26	EROSION AND SEDIMENT CONTROL DETAILS	C–302
•	27	CIVIL DETAILS	C–303
•	28	CIVIL DETAILS	C–304

NOT FOR CONSTRUCTION



SITE MAP

0 200 400 800

SCALE IN FEET

NO.	DATE	REVISION	BY	APVD
C	8/6/13	REVISED PER NYSEDEC COMMENTS ON TRACT I IRM WP	TDD	SCP
B	6/3/13	100% REMEDIAL DESIGN DRAWINGS	TDD	SCP
A	4/8/13	DRAFT 100% REMEDIAL DESIGN DRAWINGS	TDD	SCP

DSGN TDD DR TDD CHK MAP APVD SCP

Honeywell
101 COLUMBIA RD. BOX 2105, MORRISTOWN, NJ 07962

100% REMEDIAL DESIGN DRAWINGS
TRACTS I AND II HIGHLAND AVENUE
NIAGARA FALLS, NEW YORK
SITES C932157 AND 932136

MACTEC Engineering and Consulting, P.C.
511 Congress Street, Suite 200
Portland, Maine 04101
(207) 775-5401
MACTEC

COVER SHEET

VERIFY SCALE

BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	3/06/13
PROJ	3410-11-0832
DWG	G-001
SHEET	1 OF 28

FILE NAME: Z:\Projects\HONEYWELL\Niagara Falls\Issued for Construction\Tract I Revised IRM WP Drawings\TRACT I IRM G-001 Cover Sheet.dwg PLOT DATE: Tue, 06 Aug 2013 PLOT TIME: 9:34 AM

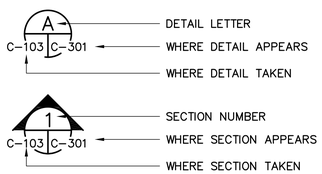
EXISTING

LEGEND

PROPOSED

- PROPERTY BOUNDARY
- INTERIOR BOUNDARY LINES
- EXISTING BUILDING
- EXISTING FOUNDATION
- CONTOUR — 585 — (PROPOSED)
- SPOT GRADE — 584.7
- EXISTING RETAINING WALL
- PAVED ROAD
- SIGNS
- EDGE OF WATER
- FENCE
- SANITARY SEWER — SS
- COMBINED SEWER MANHOLE
- WELL
- BOLLARD
- CATCH BASIN
- MANHOLE
- TREE LINE
- SINGLE TREE
- SOIL BORING — SS-2
- TEST PIT — TP-18
- UTILITY POLE
- LIGHT POLE
- GAS SHUT-OFF VALVE
- WATER SHUT-OFF VALVE
- HYDRANT
- AIR RELEASE VALVE
- OVERHEAD ELECTRIC — E
- UNDERGROUND ELECTRIC — UGE
- FORCE MAIN — FM
- WATER LINE — W
- GAS LINE — G — GAS
- STORM DRAIN LINE — SD
- UNDERDRAIN LINE — UD
- TREATED WASTEWATER — TW
- AUGMENTED SILTATION FENCE — ASF
- SILTATION FENCE — SF
- INLET PROTECTION
- STABILIZED CONSTRUCTION ENTRANCE
- STONE CHECK DAM
- ISOLATED SOIL EXCAVATION LIMIT
- LEAD IMPACTED SOIL EXCAVATION
- TCLP LEAD IMPACTED SOIL EXCAVATION
- TENORM AREA
- GRAVEL SURFACE

REFERENCE LEGEND:



ABBREVIATIONS

AASHTO	AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS
ACM	ASBESTOS CONTAINING MATERIAL
ASTM	AMERICAN SOCIETY FOR TESTING AND MATERIALS
AWG	AMERICAN WIRE GAUGE
AWWA	AMERICAN WATER WORKS ASSOCIATION
BGS	BELOW GROUND SURFACE
CJ	CONTROL JOINT
CLR	CLEAR
CS	CARBON STEEL
℄	CENTER LINE
CPT	CONE PENETRATION TEST
CON	CONCRETE
CRZ	CONTAMINATION REDUCTION ZONE
DI	DUCTILE IRON
DOT	DEPARTMENT OF TRANSPORTATION
DPS	DIFFERENTIAL POINT SENSOR
DPI	DIFFERENTIAL POINT INDICATOR
DR	DIMENSION RATIO
E	ELECTRICAL
EF	EFFLUENT
EL	ELEVATION
ELEV	ELEVATION
EW	EACH WAY
EX	EXISTING
F	FILTER
FE	FLOW ELEMENT
FF	FINISHED FLOOR
FM	FORCE MAIN
FT	FEET
G	GAS
GAC	GRANULAR ACTIVATED CARBON
GW	GROUND WATER
HDPE	HIGH DENSITY POLYETHYLENE
HP	HIGH POINT
H/O/A	HAND ON/OFF AUTO
HS	HAND SWITCH
I	INSTRUMENTATION
INST	INSTRUMENTATION
INV	INVERT
LC	LIQUID CARBON
LP	LOW POINT
LS	LEVEL SWITCH
MPT	MALE PIPE THREAD
MIN	MINIMUM
MAX	MAXIMUM
NGVD	NATIONAL GEODETIC VERTICAL DATUM
NTS	NOT TO SCALE
OC	ORGANOCLAY
OC	ON CENTER
OD	OUTSIDE DIAMETER
PAHs	POLYCYCLIC AROMATIC HYDROCARBON'S
P	PUMP
PI	PRESSURE INDICATOR
PSI	POUNDS PER SQUARE INCH
PVC	POLYVINYL CHLORIDE
RET	RETAINING
RCP	REINFORCED CONCRETE PIPE
R.O.W.	RIGHT OF WAY
S	SAMPLE
SAN	SANITARY
SCB	SOIL CEMENT BENTONITE
SCH	SCHEDULE
SS	SANITARY SEWER
STA	STATION
STB	SOIL BORING
T	TANK
TENORM	TECHNOLOGICALLY ENHANCED NATURALLY OCCURRING RADIOACTIVE MATERIALS
THW	TRANSIENT HOT WIRE
TOC	TOP OF CONCRETE
TOS	TOP OF STEEL
TYP	TYPICAL
W	WATER
ø	DIAMETER

GENERAL NOTES

GN1. CONTRACTOR SHALL VISUALLY INSPECT THE SITE TO ASCERTAIN THE CONDITION OF EXISTING FEATURES AND FAMILIARIZE THEMSELVES WITH THE PROPOSED WORK.

GN2. THE CONTRACTOR SHALL BE RESPONSIBLE TO SECURE ALL NECESSARY PERMITS EXCEPT FOR SPECIFIED PERMITS SECURED BY HONEYWELL.

GN3. KNOWN UNDERGROUND UTILITIES AND STRUCTURES ARE SHOWN ON THE DRAWINGS. THE LOCATION OF THESE EXISTING UNDERGROUND UTILITIES AND STRUCTURES SHOULD BE CONSIDERED APPROXIMATE. THEREFORE, PRIOR TO THE COMMENCEMENT OF SITE ACTIVITIES, THE CONTRACTOR SHALL VERIFY THE LOCATION OF ALL EXISTING UTILITIES OR STRUCTURES IN THE AREAS OF WORK (CALL BEFORE YOU DIG: NY 1 CALL – 1-800-962-7962). IF UTILITIES ARE TO REMAIN IN PLACE, PROVIDE ADEQUATE MEANS OF PROTECTION. THE CONTRACTOR SHALL CONFIRM THAT ANY ABANDONED UTILITY LOCATED WITHIN THE LIMIT OF WORK HAS BEEN ABANDONED IN ACCORDANCE WITH THE REQUIREMENTS OF THE UTILITY OWNER AND THE CITY OF NIAGARA FALLS.

GN4. ALL SPECIFIED WORK SHALL BE IN ACCORDANCE WITH ALL FEDERAL, STATE AND LOCAL REGULATIONS AND ORDINANCES.

GN5. BITUMINOUS PAVEMENT, CURBS, UTILITIES, FENCING AND ALL OTHER OFF-SITE FEATURES SHALL BE RESTORED UPON COMPLETION OF THE WORK UNLESS OTHERWISE INDICATED. ON-SITE DISTURBED AREAS SHALL BE FINISHED WITH A GRAVEL SURFACE OR TOPSOIL AND SEEDING.

GN6. A DECONTAMINATION PAD SHALL BE PLACED ADJACENT TO THE CURRENT WORK AREA. AS THE AREA OF WORK CHANGES THE PAD SHALL BE RELOCATED AS REQUIRED.

GN7. CONSTRUCTION WATER MANAGEMENT WILL BE REQUIRED DURING REMEDIATION ACTIVITIES. SURFACE WATER THAT POTENTIALLY CONTACTS CONTAMINATED MATERIALS AND/OR IS REMOVED FROM DECONTAMINATION PAD SUMPS WILL BE STORED IN APPROPRIATE TANKS FOR OFF-SITE DISPOSAL OR TREATMENT PRIOR TO RELEASE TO THE COMBINED SEWER SYSTEM.

GN8. SITE PREPARATION AND DEMOLITION ACTIVITIES SHALL BE COORDINATED WITH THE SEQUENCE OF CONSTRUCTION.

GN10. MOBILIZATION AND DEMOLITION ACTIVITIES SHALL BE COMPLETED USING MEANS NECESSARY TO MINIMIZE DUST EMISSIONS FROM THE SITE. AIR MONITORING WILL BE COMPLETED IN ACCORDANCE WITH THE COMMUNITY AIR MONITORING PLAN (CAMP) FOR THE SITE.

GN12. ELEVATIONS ARE BASED ON NAVD 88 DATUM. HORIZONTAL CONTROL BASED ON NAD 83 (CORS96) NEW YORK STATE PLANE, WEST ZONE.

GN13. EXISTING CONDITIONS SHOWN ON THESE PLANS ARE BASED ON THE ALTA/ASCM SURVEY COMPLETED BY PRUDENT ENGINEERING LLP ON JULY 17, 2009.

NOT FOR CONSTRUCTION

NO.	DATE	DSGN	DR	CHK	APVD	REVISION
C	8/6/13	TDD	TDD	MAP	SCP	REVISED PER NYSEDEC COMMENTS ON TRACT I IRM WP
B	6/3/13	TDD	TDD	MAP	SCP	100% REMEDIAL DESIGN DRAWINGS
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GENERAL NOTES
LEGEND AND ABBREVIATIONS

VERIFY SCALE

BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	3/06/13
PROJ	3410-11-0832
DWG	G-002
SHEET	2 OF 28

FILE NAME: Z:\Projects\HONEYWELL\Niagara Falls\Issued for Construction\Tract I Revised IRM WP Drawings\TRACT I IRM G-002 General Notes Legend and Abbreviations.dwg PLOT DATE: Tue, 06 Aug 2013 PLOT TIME: 9:38 AM

DUST CONTROL

1. THE CONTRACTOR SHALL EXECUTE THE WORK BY METHODS THAT MINIMIZE THE GENERATION OF DUST AND NUISANCE ODORS. THE CONTRACTOR SHALL EMPLOY DUST CONTROL MEASURES TO MINIMIZE THE CREATION OF AIRBORNE DUST DURING EXECUTION OF THE WORK. AT A MINIMUM, STANDARD DUST CONTROL MEASURES AND TECHNIQUES SHALL BE EMPLOYED IN AREAS OF HEAVY EQUIPMENT TRAFFIC; SOIL EXCAVATION ACTIVITIES; SOIL SCREENING AND STABILIZATION; SOIL STOCKPILE MANAGEMENT; AND SOIL BACKFILL AND COMPACTION. THE DUST CONTROL MEASURES AND PROCEDURES WILL BE SUCH THAT, AT A MINIMUM, AIR QUALITY IS IN COMPLIANCE WITH APPLICABLE OSHA REGULATIONS.

2. FOR TRACT II THE STABILIZATION PROCESS OF TCLP LEAD IMPACTED SOIL, INCLUDING SCREENING AND CEMENT MIXING SHALL BE CONDUCTED WITHIN A TEMPORARY ENCLOSURE WITH A NEGATIVE PRESSURE AND AIR FILTERING SYSTEM THAT PROTECTS WORKERS AND CONTAINS AND PREVENTS MIGRATION OF POTENTIALLY LEAD IMPACTED DUST. DUST AND ODOR CONTROL SYSTEMS SHALL BE IMPLEMENTED AS NECESSARY TO MEET LOCAL, STATE, AND/OR FEDERAL REGULATIONS FOR AIR EMISSIONS AND DUST AND TO CONTROL NUISANCE ODORS.

3. THE CONTRACTOR SHALL PROVIDE AN ODOR CONTROL SYSTEM TO CONTROL ODORS AS NECESSARY TO ADDRESS COMPLAINTS THE LOCAL COMMUNITY. ODOR CONTROL AGENTS SUCH AS AN ODOR-CONTROL FOAM, MISTING SYSTEM, OR OTHER METHOD SELECTED BY THE CONTRACTOR AND APPROVED BY THE ENGINEER SHALL BE AVAILABLE ON SITE AND SHALL BE APPLIED AS NEEDED TO CONTROL NUISANCE ODORS. IF USED, ODOR CONTROL FOAM SHALL BE A BIODEGRADABLE, NON-FLAMMABLE, AND NON-TOXIC WATER-BASED MATERIAL DESIGNED FOR THE CONTROL OF VOCS, DUST, AND ODOR.

4. PERIMETER AND WORK AREA AIR MONITORING WILL BE CONDUCTED IN ACCORDANCE WITH THE APPROVED DUST CONTROL/AIR MONITORING PLAN. MONITORING WILL CONSIST OF BOTH CONTINUOUS PARTICULATE/DUST PERIMETER AIR MONITORING AND VISUAL OBSERVATION. DURING NON-WORKING HOURS, THE SITE MUST BE LEFT IN A CONDITION THAT WILL PREVENT DUST FROM BEING GENERATED. THE CONTRACTOR WILL MONITOR WEATHER FORECASTS FOR DRY AND/OR WINDY CONDITIONS AND PREPARE THE SITE ACCORDINGLY.

5. PROTECTION OF TEMPORARY SOIL STOCKPILES SHALL BE CONDUCTED TO PREVENT GENERATION OF DUST OR EROSION DURING PRECIPITATION EVENTS, BOTH DURING ACTIVE WORK PERIODS AND NON-WORKING HOURS, INCLUDING THE USE OF TEMPORARY COVERINGS AND PERIMETER BARRIERS.

6. APPLY BY WATER MIST USING APPROPRIATE METHODS AND WITH EQUIPMENT INCLUDING A TANK WITH GAUGE-EQUIPPED PRESSURE PUMP AND A NOZZLE-EQUIPPED SPRAY BAR. APPLY WATER UNTIL THE SURFACE IS WET, BUT AVOID PONDING, RUN OFF, OR MUDDY CONDITIONS.

7. MAINTAIN CLEAN PAVEMENT SURFACES WITHIN THE DESIGNATED WORK AREA AND SITE EGRESS ROUTE. DO NOT PERMIT CONSTRUCTION EQUIPMENT TO TRACK SOIL OUTSIDE OF THE WORK AREA OR ON PUBLIC ROADS.

EROSION CONTROL

1. PROVIDE AND INSTALL ALL MATERIALS, EQUIPMENT, AND LABOR NECESSARY FOR THE CONTROL OF STORM RUNOFF/SURFACE WATER AND PREVENT EROSION FROM THE SITE. PLACE, INSPECT, MAINTAIN, AND REPAIR/REPLACE EROSION AND SEDIMENTATION CONTROL MEASURES IN ACCORDANCE WITH THE APPLICABLE EROSION AND SEDIMENT CONTROL REGULATORY REQUIREMENTS AND STANDARDS, AS SHOWN ON THE CONSTRUCTION DRAWINGS AND IN ACCORDANCE WITH THE APPROVED STORMWATER POLLUTION PREVENTION PLAN (SWPPP). AT THE COMPLETION OF THE CONSTRUCTION, PROVIDE ALL MATERIALS, EQUIPMENT, AND LABOR NECESSARY FOR THE REMOVAL, TRANSPORT AND DISPOSAL OF TEMPORARY EROSION AND SEDIMENT CONTROL STRUCTURES NOT SPECIFIED TO REMAIN. DOWNGRADIENT FROM DISTURBED AREAS, REMOVE, TRANSPORT, AND DISPOSE OF SEDIMENT RESULTING FROM EROSION CONTROL MEASURES IN A MANNER CONSISTENT WITH OVERALL INTENT OF THIS SPECIFICATION AND WHICH DOES NOT RESULT IN ADDITIONAL EROSION.

2. PROVIDE AND INSTALL ALL EROSION AND SEDIMENT CONTROL MEASURES IN ACCORDANCE WITH THE APPLICABLE EROSION AND SEDIMENT CONTROL REGULATORY REQUIREMENTS, STANDARDS AND SPECIFICATIONS AND AS REQUIRED BY FIELD CONDITIONS DURING THE EXECUTION OF THE WORK. CONDUCTING THE WORK IN ACCORDANCE WITH THE CONTROL MEASURES SHOWN ON THE CONSTRUCTION DRAWINGS AND THE SWPPP DOES NOT RELIEVE THE CONTRACTOR OF RESPONSIBILITY FOR COMPLETING THE WORK IN A MANNER THAT MINIMIZES EROSION WHEN FIELD CONDITIONS OCCUR THAT REQUIRE ADDITIONAL OR DIFFERENT MEASURES.

3. TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSTALLED AS THE FIRST STEP IN CONSTRUCTION, SHALL BE CONTINUOUSLY MAINTAINED, AND SHALL NOT BE REMOVED UNTIL PERMANENT SURFACE STABILIZATION OF ALL DISTURBED AREAS IS TO HONEYWELL'S SATISFACTION.

4. PROTECTION OF TEMPORARY SOIL STOCKPILES, ESPECIALLY LEADED IMPACTED SOILS SHALL BE REQUIRED AT ALL TIMES. SOIL STOCKPILES SHALL BE PROTECTED WITH POLY SHEETING PRIOR TO FORECASTED SIGNIFICANT RAIN EVENTS (0.5 INCHES OR MORE) OR AS CONDITIONS REQUIRE BASED ON OBSERVED SLOPE AND WEATHER FORECAST CONDITIONS. OVERLAP ADJACENT SHEETS BY A MINIMUM OF 12 INCHES AND SECURELY ANCHOR SHEETING WITH SAND BAGS AND/OR SOIL PEGS, STAPLES OR STAKES.

5. IF THE PLANNED MEASURES DO NOT RESULT IN EFFECTIVE CONTROL OF EROSION AND SEDIMENT RUNOFF TO THE SATISFACTION OF THE ENGINEER OR REGULATORY AGENCIES HAVING JURISDICTION OVER THE PROJECT, THE CONTRACTOR SHALL IMMEDIATELY ADJUST THEIR PROGRAM AND/OR INSTITUTE ADDITIONAL MEASURES SO AS TO ELIMINATE EXCESSIVE EROSION AND SEDIMENT RUNOFF. NOT ALL REQUIRED EROSION AND SEDIMENTATION CONTROL MEASURES MAY BE SHOWN OR REFERENCED ON THE CONSTRUCTION DRAWINGS AND IN THE SWPPP. OTHER MEASURES AS NECESSARY TO PREVENT EROSION MAY BE REQUIRED TO AUGMENT THE PROPOSED MEASURES REFERENCED ON THE CONSTRUCTION DRAWINGS AND IN THE SWPPP BASED ON ACTUAL FIELD CONDITIONS ENCOUNTERED.

6. THE CONTRACTOR SHALL BE HELD RESPONSIBLE FOR THE IMPLEMENTATION AND MAINTENANCE OF ALL EROSION CONTROL MEASURES ON THE SITE. THROUGHOUT CONSTRUCTION AND UNTIL THE SITE HAS BEEN STABILIZED UPON COMPLETION OF THE WORK, ALL EROSION AND SEDIMENT CONTROL MEASURES WILL REQUIRE PERIODIC INSPECTION AND MAINTENANCE TO ENSURE THAT SUCH MEASURES ARE PROVIDING EFFECTIVE SERVICE. AT A MINIMUM, ALL EROSION AND SEDIMENT CONTROL WILL BE INSPECTED AT LEAST ONCE A WEEK AND WITHIN 24 HOURS FOLLOWING RAIN EVENTS OF 0.5 INCHES OR GREATER. CONDUCT REQUIRED REPAIRS TO INSTALLED MEASURES IMMEDIATELY TO ENSURE CONTINUED EFFECTIVE OPERATION.

PRECAST CONCRETE STORM DRAIN STRUCTURES

1. REINFORCED PRECAST CONCRETE IN ACCORDANCE WITH ASTM C478 WITH GASKETS IN ACCORDANCE WITH ASTM C923.

2. REINFORCED CONCRETE RISER SECTIONS, AN ECCENTRIC OR CONCENTRIC CONE/TOP AND A MONOLITHIC BASE SECTION CONFORMING TO THE DIMENSIONS INDICATED ON THE DRAWINGS.

3. THE MINIMUM COMPRESSIVE STRENGTH OF CONCRETE: 4,000 PSI.

PRECAST CONCRETE STORM DRAIN STRUCTURES CONT'D

4. REINFORCING SHALL EXTEND INTO THE TONGUE AND GROOVE OF EACH MANHOLE SECTION WALL.

5. CASTING METHODS MUST ASSURE EACH UNIT TO BE VERY DENSE IN STRUCTURE AND IMPERVIOUS TO WATER. PAINT THE EXTERIOR OF PRECAST MANHOLE STRUCTURES WITH TWO HEAVY COATS OF BITUMINOUS PAINT.

6. TONGUE AND GROOVE: FORMED OF CONCRETE SO AS TO RECEIVE THE GASKETS. SECTIONS SHALL BE SET SO AS TO BE VERTICAL AND IN TRUE ALIGNMENT. HORIZONTAL JOINTS BETWEEN SECTIONS OF PRECAST CONCRETE BARRELS SHALL BE PROVIDED WITH A BUTYL RUBBER JOINT SEALANT, WHICH MEETS ASTM C 443 OR AASHTO M198, TYPE B SPECIFICATION, FOR WATERTIGHTNESS.

7. MORTAR AND GROUT: MORTAR: COMPOSED OF PORTLAND CEMENT, HYDRATED LIME, AND SAND, IN THE PROPORTIONS OF 1 PART CEMENT TO 1/2 PART LIME TO 4 1/2 PARTS SAND, (BY VOLUME). THE PROPORTION OF CEMENT TO LIME MAY VARY FROM 1:L/4 FOR HARD BRICK TO 1:3/4 FOR SOFTER BRICK, BUT IN NO CASE SHALL THE VOLUME OF SAND EXCEED THREE TIMES THE SUM OF THE VOLUME OF CEMENT AND LIME. CEMENT – TYPE II PORTLAND CEMENT CONFORMING TO ASTM C 150. HYDRATED LIME – TYPE M CONFORMING TO THE ASTM C 207.SAND: INERT NATURAL SAND CONFORMING TO THE ASTM C 33 FOR FINE AGGREGATES.

8. STORM DRAIN MANHOLE FRAMES AND COVERS: PROVIDE A MINIMUM 24 INCH DIAMETER CLEAR OPENING. PROVIDE COVERS WITH THE LETTER "D" OR THE WORD "DRAIN" CAST INTO THE TOP SURFACE FOR MANHOLES. THE FRAME AND COVER SHALL MEET ASSHTO – H20 LOADING.

9. STORM DRAIN GRATES: PROVIDE A MINIMUM 24 INCH DIAMETER CLEAR OPENING. PROVIDE HEAVY DUTY ROUND OR SQUARE FRAMES AND GRATES WITH A MINIMUM 1.8 SQUARE FOOT FREE OPEN AREA. THE FRAME AND GRATE SHALL MEET ASSHTO – H20 LOADING.

STORM DRAIN AND UNDERDRAIN PIPING

1. PERFORATED PLASTIC UNDERDRAIN: PIPE FOR UNDERDRAINS SHALL BE 4-INCH HEAVY DUTY SINGLE WALL CORRUGATED HIGH-DENSITY POLYETHYLENE PIPE (HDPE) AS INDICATED ON THE DRAWINGS. PIPE AND FITTING MATERIAL SHALL BE HDPE MEETING ASTM F 405 OR AASHTO M 252. PERFORATIONS SHALL BE SLOTTED OR ROUND HOLES IN ACCORDANCE WITH AASHTO M-252 CLASS 2. MANUFACTURER'S STANDARD PERFORATED PIPE, WHICH ESSENTIALLY MEETS THESE REQUIREMENTS, MAY BE SUBSTITUTED WITH PRIOR APPROVAL OF THE ENGINEER. JOINTS SHALL BE CONDUCTED USING SPLIT COUPLERS, SNAP COUPLERS OR BELL AND SPIGOT WITH ELASTOMERIC GASKETS IN ACCORDANCE WITH ASTM D 3212 AND ASTM F 477 OR ASTM D 1056. ONLY COUPLERS, JOINTS AND GASKETS PROVIDED BY OR RECOMMENDED BY THE PIPE MANUFACTURER FOR THE PIPE SHALL BE USED.

2. SOLID-WALL STORM DRAIN PIPING: CORRUGATED HIGH-DENSITY POLYETHYLENE PIPE (HDPE) WITH SMOOTH INTERIOR (DUAL WALL) OR CORRUGATED INTERIOR (SINGLE WALL) AS INDICATED ON THE DRAWINGS AND CONFORMING TO AASHTO M252, AASHTO M294, OR AASHTO MP7 TYPE S (SMOOTH INTERIOR) OR TYPE C (CORRUGATED INTERIOR). PIPE AND FITTING MATERIAL SHALL BE HIGH-DENSITY POLYETHYLENE MEETING ASTM D 3350 MINIMUM CELL CLASSIFICATION OF 335400C. JOINTS SHALL BE CONDUCTED USING SPLIT COUPLERS, SNAP COUPLERS OR BELL AND SPIGOT WITH ELASTOMERIC GASKETS IN ACCORDANCE WITH ASTM D 3212 AND ASTM F 477 OR ASTM D 1056. UNLESS OTHERWISE INDICATED, JOINTS SHALL BE SILT-TIGHT. ONLY COUPLERS, JOINTS AND GASKETS PROVIDED BY OR RECOMMENDED BY THE PIPE MANUFACTURER FOR THE PIPE SHALL BE USED.

3. ASPHALT REPAIR OR PATCHING OF CITY STREETS REMOVED DURING TRENCHING ACTIVITIES FOR INSTALLATION OF STORM DRAIN PIPING SHALL BE CONDUCTED IN ACCORDANCE WITH THE CITY OF NIAGARA FALLS DPW STANDARD SPECIFICATIONS AND DETAILS.

SEEDING

1. SEED MIXTURE PER SUBSECTION 610 AND 713-04 IN THE NYSDOT STANDARD SPECIFICATIONS AS SHOWN BELOW OR OTHER SUITABLE SEED MIX IS ACCEPTABLE IF APPROVED BY THE COUNTY SOIL AND WATER CONSERVATION DISTRICT AND BY HONEYWELL'S REPRESENTATIVE.

NAME	WT. OF PURE LIVE SEED/ACRE
RED FESCUE (FESTIGA RUBRA)	54
PERENNIAL RYEGRASS (LOLIUM PERENNE)	31
WHITE CLOVER (TRIFOLIUM REPENS)(1)	5
TOTAL	90

(1) ADD INOCULANT IMMEDIATELY PRIOR TO SEEDING.

2. FERTILIZER – SUBSECTION 713-03 IN THE NYSDOT STANDARD SPECIFICATIONS, TYPE NO. 3: 10-6-4 GRADE CONTAINING AT LEAST 10 PERCENT AVAILABLE NITROGEN, 6 PERCENT READILY AVAILABLE PHOSPHORIC ACID AND 4 PERCENT TOTAL AVAILABLE POTASH IN CONFORMITY WITH THE STANDARDS OF THE ASSOCIATION OF OFFICIAL AGRICULTURAL CHEMISTS. FERTILIZER SHALL BE APPLIED AT THE RATE BASED ON THE RESULTS OF THE NUTRIENT ANALYSIS WHEN CONDUCTED OR AT A RATE OF 18 LBS PER 1000 SQUARE FEET.

3. LIME – SUBSECTION 713-02 IN THE NYSDOT STANDARD SPECIFICATIONS GROUND LIMESTONE COMPOSED OF NOT LESS THAN 88 PERCENT CALCIUM AND MAGNESIUM CARBONATE; AT LEAST 60 PERCENT SHALL PASS A NO. 100 MESH SCREEN, 90 PERCENT SHALL PASS A NO. 20 MESH SCREEN. LIME SHALL BE APPLIED AT THE RATE BASED ON THE RESULTS OF THE NUTRIENT ANALYSIS WHEN CONDUCTED OR AT A RATE OF 40 LBS PER 1000 SQUARE FEET.

4. MULCH – FOR PROTECTION OF NEWLY SEEDED AREAS OR WHERE THERE IS EROSION POTENTIAL (SWALES).

   a. STRAW OR HAY FREE FROM PRIMARY NOXIOUS WEED SEEDS AND ROUGH OR WOODY MATERIALS AND HAVING NOT MORE THAN 15% MOISTURE CONTENT. PROVIDE HAY OR STRAW MEETING THE REQUIREMENTS OF SUBSECTION 713-18 AND/OR 713-19 IN THE NYSDOT STANDARD SPECIFICATIONS.

   b. WOOD CHIPS USED FOR MULCH OR EROSION CONTROL SHALL NOT EXCEED 3 INCHES IN THE GREATEST DIMENSION AND SHALL MEET THE REQUIREMENTS OF SUBSECTION 713-05 IN THE NYSDOT STANDARD SPECIFICATIONS.

   c. WOOD FIBER FOR USE AS MULCH IN CONJUNCTION WITH ESTABLISHMENT OF VEGETATION, SHALL MEET THE REQUIREMENTS OF SUBSECTION 713-11 IN THE NYSDOT STANDARD SPECIFICATIONS.

5. PROTECT AND CARE FOR SEEDED AREAS UNTIL FINAL ACCEPTANCE OF THE WORK, AND REPAIR ANY DAMAGE TO SEEDED AREAS CAUSED BY PEDESTRIAN OR VEHICULAR TRAFFIC OR OTHER CAUSES, AT THE CONTRACTOR'S EXPENSE.

6. APPLY WATER TO MAINTAIN PROPER MOISTURE TO PROMOTE GROWTH. USE APPROVED WATER WAGONS OR TANKS OR OTHER APPROVED DEVICES TO APPLY WATER IN THE FORM OF A SPRAY OR SPRINKLE WITHOUT EROSIVE FORCE. APPLY WATER PRIOR TO 10:00 A.M. AND AFTER 4:00 P.M. TO MINIMIZE LOSSES DUE TO EVAPORATION.

7. CUT BACK WEEDS GROWING IN SEEDED AREAS TO PREVENT THEM FROM DOMINATING THE DESIRED GRASS PLANTS.

8. TO BE ACCEPTABLE, A STAND OF GRASS SHALL SHOW A REASONABLY THICK, UNIFORM STAND, FREE FROM SIZABLE AREAS OF THIN OR BARE SPOTS, WITH A UNIFORM COVERAGE OF AT LEAST 90% OF GRASS.

9. RESEED ANY PARTS OF SEEDED AREAS WHICH FAIL TO SHOW A UNIFORM STAND UNTIL ALL AREAS ARE COVERED WITH GRASS, AT THE CONTRACTOR'S EXPENSE.

10. MAINTENANCE PERIOD: THIS PERIOD SHALL EXTEND FOR 60 DAYS OR UNTIL THE TURF HAS BEEN MOWED 3 TIMES OR UNTIL ALL WORK ON THE ENTIRE AREA HAS BEEN COMPLETED AND ACCEPTED.

WASTE REMOVAL AND OFFSITE DISPOSAL:

WASTE MANAGEMENT AND CONTAINERS:

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROPER ON-SITE MANAGEMENT OF WASTES GENERATED IN COMPLIANCE WITH ALL FEDERAL, STATE AND LOCAL REGULATIONS. MANAGEMENT SHALL INCLUDE HANDLING, SEGREGATING, TESTING, AND TEMPORARY STOCKPILING OR STORING ALL WASTES GENERATED DURING THE WORK.

2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MOVEMENT OF THE CONTAINERS, TRUCKS, ETC. INTO POSITIONS REQUIRED FOR PROPER LOADING AND MANAGEMENT OF MATERIAL.

3. THE CONTRACTOR SHALL SEGREGATE HAZARDOUS FROM NON-HAZARDOUS MATERIALS, AS WELL AS RADIOLOGICAL WASTES, AS REQUIRED FOR PROPER OFF-SITE DISPOSAL.

4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR LOADING ALL WASTE CONTAINERS, TRUCKS, ETC. WITH ALL REMOVED SOIL, WASTE MATERIAL, AND DEBRIS.

5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING THE SCHEDULE FOR DELIVERY AND PICK-UP OF SUPPLIED WASTE CONTAINERS. THE CONTRACTOR SHALL ALSO BE RESPONSIBLE FOR MOVEMENT AND STORAGE OF CONTAINERS WITHIN THE SITE TO ALLOW THE PROGRESS OF THE WORK.

6. THE CONTRACTOR SHALL PROVIDE APPROPRIATE CONTAINERS (E.G., ROLL-OFF CONTAINERS), HAUL TRUCKS FOR THE PROPER OFFSITE DIRECT LOADING OF NON-HAZARDOUS AND HAZARDOUS CONTAMINATED SOILS, RADIOLOGICAL WASTE MATERIALS, AND OTHER IMPACTED DEBRIS FOR OFF-SITE DISPOSAL.

7. THE CONTRACTOR SHALL PROVIDE APPROPRIATE CONTAINERS AND/OR TRUCKS FOR THE MANAGEMENT AND OFF-SITE DISPOSAL/RECYCLING OF NON-CONTAMINATED MATERIAL, TRASH, RUBBISH, AND DEBRIS GENERATED DURING THE CONSTRUCTION ACTIVITIES.

8. THE CONTRACTOR SHALL PROVIDE PORTABLE, TEMPORARY STORAGE TANKS (FRAC TANKS, ETC.) FOR THE STORAGE/TREATMENT OF COLLECTED LIQUIDS (I.E. DECONTAMINATION FLUIDS, CONSTRUCTION DEWATERING, AND CONTAMINATED STORMWATER).

TRANSPORTATION AND DISPOSAL OF WASTE:

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE TRANSPORTATION OF ALL SOLID OR LIQUID WASTES SPECIFIED OR GENERATED AS A RESULT OF THE WORK OFF SITE. THIS INCLUDES MATERIALS GENERATED BY FINAL SITE CLEANUP ACTIVITIES INCLUDING THE DISMANTLING OF THE TEMPORARY FACILITIES AND CONTROLS.

2. THE CONTRACTOR SHALL BE RESPONSIBLE TO INSPECT THE TRANSPORTATION VEHICLES BEFORE AND AFTER LOADING TO ENSURE COMPLIANCE WITH ALL LOCAL, STATE, AND FEDERAL REGULATIONS FOR THE SAFE TRANSPORT OF WASTES FROM THE SITE TO THE RECEIVING FACILITY. THE CONTRACTOR SHALL PROVIDE THE NECESSARY LABOR AND MATERIALS TO INSURE ALL TRUCKS, CONTAINERS, ETC. ARE LINED WITH PLASTIC PRIOR TO FILLING, FOAMED OR STABILIZED WITH AN AGENT, IF NECESSARY, AND COVERED PRIOR TO DEPARTURE.

3. THE CONTRACTOR SHALL INSURE THAT THE TRANSPORTERS ARRIVING AT THE SITE FOR LOADING DO NOT CAUSE UNDUE CONGESTION TO LOCAL STREETS, AND SHALL STAGE TRUCKS EITHER WITHIN THE PERIMETER OF THE SITE OR AT AN OFF-SITE STAGING AREA APPROVED BY THE ENGINEER. TRANSPORTERS SHALL NOT BE ACCEPTED AT THE SITE BEFORE 7:00 AM AND AFTER 5:00 PM.

4. THE CONTRACTOR'S TRANSPORTERS SHALL PROCEED DIRECTLY FROM THE SITE TO THE DESIGNATED RECEIVING FACILITY. TEMPORARY STAGING OR STORAGE OF MATERIAL AT INTERMEDIATE LOCATIONS BETWEEN THE SITE AND THE RECEIVING FACILITY IS PROHIBITED WITH WRITTEN APPROVAL BY HONEYWELL.

5. THE CONTRACTOR SHALL ORIGINATE, MAINTAIN, AND PROVIDE HONEYWELL WITH A COPY OF EACH EXECUTED BILL OF LADING FOR ALL LOADS SHIPPED OFF-SITE. IN ADDITION, THE CONTRACTOR SHALL PROVIDE HONEYWELL, DOCUMENTATION AND RECORDS VERIFYING RECEIPT OF EACH TRUCK LOAD BY THE RECEIVING FACILITY. SUCH DOCUMENTATION SHALL INDICATE THE ACTUAL WEIGHT OF EACH LOAD SHIPPED.

6. TRANSPORTERS SHALL PROCEED FROM THE SITE ALONG TRAFFIC ROUTES ESTABLISHED BY THE CONTRACTOR AND APPROVED BY THE LOCAL MUNICIPALITY AND HONEYWELL. THE CONTRACTOR SHALL ENSURE THAT TRUCKS LEAVING THE SITE ARE WITHIN APPROPRIATE WEIGHT LIMITATIONS FOR THE LOCAL ROADS ALONG THE DESIGNATED ROUTE.

7. HONEYWELL'S REPRESENTATIVE WILL CONDUCT ALL REQUIRED WASTE CHARACTERIZATION SAMPLING AND TESTING OF CONTAMINATED MATERIAL DESIGNATED FOR OFFSITE DISPOSAL IN ACCORDANCE WITH THE DISPOSAL FACILITY REQUIREMENTS.

8. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROPER DISPOSAL OF ALL SOLID AND LIQUID WASTES THAT ARE SPECIFIED AS A COMPONENT OF THE WORK OR THAT ARE GENERATED DURING THE EXECUTION OF THE WORK IN CONFORMANCE WITH ALL FEDERAL, STATE, AND LOCAL REGULATIONS AND REQUIREMENTS. PROPER DISPOSAL REQUIRES THAT THE FACILITY ACCEPTING THE WASTE BE A STATE LICENSED DISPOSAL/RECYCLING FACILITY THAT IS APPROVED FOR ACCEPTANCE OF THE WASTE BASED ON THE RESULTS OF THE CHARACTERIZATION TESTING AND ANALYSIS.

9. THE DISPOSAL FACILITIES SHALL BE AN APPROVED HONEYWELL DISPOSAL FACILITY. THE CONTRACTOR SHALL NOT CHANGE FACILITIES WITHOUT PRIOR CONSENT OF THE HONEYWELL.

DSGN	NO.	DATE	REVISION	CHK	APVD
TDD	A	4/8/13	DRAFT 100% REMEDIAL DESIGN DRAWINGS	TDD	SCP
	B	6/3/13	100% REMEDIAL DESIGN DRAWINGS	TDD	SCP
	C	8/6/13	REVISED PER NYSEDEC COMMENTS ON TRACT I IRM WP	TDD	SCP
DR		TDD		MAP	BY

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GENERAL PROJECT SPECIFICATIONS

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	3/06/13
PROJ	3410-11-0832
DWG	G-003
SHEET	3 OF 28

EARTHWORK

1. THE CONTRACTOR SHALL LOCATE EXISTING UNDERGROUND UTILITIES IN THE AREAS OF WORK. IF UTILITIES ARE TO REMAIN IN PLACE, PROVIDE ADEQUATE MEANS OF PROTECTION DURING EARTHWORK OPERATIONS.

2. SHOULD UNCHARTED, OR INCORRECTLY CHARTED, PIPING OR OTHER UTILITIES BE ENCOUNTERED DURING EXCAVATION, CONSULT THE UTILITY OWNER IMMEDIATELY FOR DIRECTIONS. COOPERATE WITH HONEYWELL'S REPRESENTATIVE AND UTILITY COMPANIES IN KEEPING RESPECTIVE SERVICES AND FACILITIES IN OPERATION. THE CONTRACTOR SHALL REPAIR DAMAGED UTILITIES TO SATISFACTION OF THE UTILITY OWNER.

3. BARRICADE AND MARK OPEN EXCAVATIONS OCCURRING AS PART OF THIS WORK IN ACCORDANCE WITH APPLICABLE STANDARDS.

4. AS REQUIRED, PROTECT STRUCTURES, UTILITIES, SIDEWALKS, PAVEMENTS, AND OTHER FACILITIES DESIGNATED TO REMAIN FROM DAMAGE CAUSED BY SETTLEMENT, LATERAL MOVEMENT, UNDERMINING, WASHOUT, AND OTHER HAZARDS CREATED BY EARTHWORK OPERATIONS AND TRUCK TRAFFIC.

OFF–SITE SOIL MATERIALS:

1. COMMON BORROW PROVIDED FOR CLEAN SOIL COVER AND SUBGRADE FILL FROM AN OFF–SITE SOURCE SHALL BE USED, AS NECESSARY, TO ACHIEVE THE SUBGRADE ELEVATIONS INDICATED ON THE DRAWINGS. COMMON BORROW SHALL CONSIST OF GRANULAR SOIL, SUITABLE FOR EMBANKMENT CONSTRUCTION WITH A MAXIMUM STONE SIZE OF 4 INCHES AND A MAXIMUM OF 35% PASSING THE 200 SIEVE. IT SHALL BE FREE FROM FROZEN MATERIALS, PERISHABLE RUBBISH, PEAT, AND OTHER UNSATISFACTORY MATERIAL. IT SHALL BE OF SUCH A NATURE AND CHARACTER THAT IT CAN BE COMPACTED TO THE SPECIFIED DENSITY. THE MOISTURE CONTENT SHALL BE SUFFICIENT TO PROVIDE THE REQUIRED COMPACTION AND A STABLE EMBANKMENT. IN NO CASE SHALL THE MOISTURE CONTENT EXCEED 4% ABOVE OPTIMUM, WHICH SHALL BE DETERMINED IN ACCORDANCE WITH ASTM D 1557.

2. GRAVEL FOR FINAL SURFACE COURSE AS SHOWN ON THE DRAWINGS SHALL MEET THE REQUIREMENTS OF NEW YORK STATE DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS (NYSDOT SS) TYPE 2 OR TYPE 4 AGGREGATE.

3. 3/8–INCH CRUSHED STONE FOR PIPE BEDDING MATERIAL SHALL MEET THE REQUIREMENTS OF COARSE AGGREGATE CRUSHED STONE SIZE DESIGNATION 1A OR 1ST PER SECTION 703–02 OF THE NYSDOT SS.

4. PERMEABLE SOIL USED FOR CONSTRUCTION OF INFILTRATION SWALES SHALL CONSIST OF CLEAN SAND MEETING THE REQUIREMENTS OF CUSHION SAND PER SECTION 703–06 OF THE NYSDOT SS.

5. TOPSOIL: TOPSOIL SHALL CONSIST OF GOOD QUALITY FRIABLE SOIL CONSISTING OF A SANDY LOAM, LOAM OR SILTY LOAM THAT IS FREE OF STONES OVER 1–1/2–INCHES. PROVIDE SOIL MATERIAL WITH A MINIMUM 20% AND A MAXIMUM OF 80% PASSING THE NO. 200 SIEVE AND NOT MORE THAN 15% CLAY AND NOT MORE THAN 10% GRAVEL BY VOLUME. TOPSOIL SHALL BE REASONABLY FREE FROM SUBSOIL, CLAY LUMPS, STONES, BRUSH, OBJECTIONABLE STUMPS, ROOTS, LITTER, TOXIC SUBSTANCES, AND OTHER MATERIAL OR SUBSTANCES WHICH MAY BE HARMFUL TO PLANT GROWTH OR BE A HINDRANCE TO GRADING, PLANTING AND MAINTENANCE OPERATIONS. THE PH OF THE MATERIAL IS RECOMMENDED TO BE BETWEEN 5.5 AND 7.6 AS GUIDANCE. THE ORGANIC CONTENT SHALL BE NOT LESS THAN 2 PERCENT NOR MORE THAN 6 PERCENT. TOPSOIL CONTAINING SOLUBLE SALTS GREATER THAN 500 PPM SHALL NOT BE USED.

EXCAVATION OF CONTAMINATED SOIL:

1. COMPLETE EXCAVATION BY CONFORMING TO THE LIMITS SHOWN ON THE DRAWINGS. ADDITIONAL EXCAVATION OF IMPACTED SOIL BEYOND THE INITIAL LIMITS SHOWN ON THE DRAWINGS MAY BE REQUIRED BASED ON THE ANALYTICAL RESULTS OF VERIFICATION SOIL SAMPLES COLLECTED BY HONEYWELL'S REPRESENTATIVE FROM EXPOSED EXCAVATION BOTTOM SIDE SLOPES.

2. THE EXCAVATION OF THE RADIOLOGICAL MATERIAL (WASTE SLAG) WILL BE GUIDED BY REAL–TIME VISUAL AND RADIOLOGICAL MONITORING TO IDENTIFY THE MATERIAL CONSISTING OF THE PHOSPHOROUS PRODUCTION SLAG AND EXHIBITING GAMMA COUNTS ON THE SODIUM–IODIDE DETECTOR IN EXCESS OF 2 TIME BACKGROUND. THE RADIOLOGICAL MONITORING WILL BE CONDUCTED BY SPECIALIZED PERSONNEL PROVIDED BY A CONTRACTOR PROCURED SUBCONTRACTOR.

3. DURING EXCAVATION, SEGREGATE AND STOCKPILE SEPARATELY, SOIL EXCAVATED FROM WITHIN THE CONTAMINATION LIMITS FROM SOIL EXCAVATED FROM EXPECTED CLEAN EXCAVATION AREAS. THIS INCLUDES SEGREGATING RADIOLOGICAL IMPACTED SOIL/MATERIAL; SEGREGATING LEAD IMPACTED SOIL FAILING TCLP; AND LEAD IMPACTED SOIL EXCEEDING TOTAL LEAD CLEANUP CRITERIA.

4. TRACT II LEAD IMPACTED SOIL MATERIAL EXCEEDING TCLP STANDARDS WILL BE STABILIZED WITH 5 PERCENT PORTLAND CEMENT WITHIN AN ENCLOSED STRUCTURE PRIOR TO PLACEMENT WITHIN THE BORROW PIT.

5. SLOPE SIDES OF EXCAVATIONS TO COMPLY WITH APPLICABLE CODES AND ORDINANCES. SHORE AND BRACE WHERE SLOPING IS NOT POSSIBLE BECAUSE OF SPACE RESTRICTIONS OR STABILITY OF MATERIAL EXCAVATED. MAINTAIN SIDES AND SLOPES OF EXCAVATIONS IN A SAFE CONDITION UNTIL COMPLETION OF BACKFILLING.

SCREENING:

1. WASTE MATERIAL EXCAVATED FROM THE RADIOLOGICAL DESIGNATED AREAS SHALL BE SCREENED TO REMOVE THE RADIOLOGICAL SLAG MATERIAL FROM THE NON–IMPACTED MATERIAL. THE EXCAVATED MATERIAL WILL BE SCREENED INTO TWO (2) STREAMS; ≥ 2 INCHES AND LESS THAN 2 INCHES. THE LARGER MATERIAL WILL BE SCANNED TO VERIFY IT CONTAINS ELEVATED RADIOLOGICAL READINGS AND THE SMALLER MATERIAL SCANNED TO ENSURE THAT ITS ACTIVITY IS LESS THAN 2 TIMES BACKGROUND. SLAG LIKE MATERIAL FOUND TO CONTAIN ELEVATED ACTIVITY 2 TIMES OR MORE THAN BACKGROUND WILL REQUIRE PROPER OFFSITE DISPOSAL. THE RADIOLOGICAL SCANNING/MONITORING WILL BE CONDUCTED BY THE CONTRACTOR'S SPECIALIZED SUBCONTRACTOR.

2. LEAD IMPACTED SOIL CONTAINS BATTERY CASING DEBRIS AND OTHER DEMOLITION DEBRIS THAT SHALL BE SEPARATED BY SCREENING THE SOIL MATERIAL. THE SCREENED DEBRIS MATERIAL WILL REQUIRE PROPER OFFSITE DISPOSAL.

EARTHWORK CONT'D

BACKFILL:

1. BACKFILL EXCAVATIONS AS PROMPTLY AS WORK PERMITS FOLLOWING ACCEPTABLE VERIFICATION SAMPLING RESULTS AND UPON ACCEPTANCE BY HONEYWELL'S REPRESENTATIVE.

2. WITHIN THE BORROW PIT AREA, LEAD IMPACTED SOIL, INCLUDING THE STABILIZED LEAD SOIL FROM TRACT II SHALL BE PLACED INTO THE COMPLETED EXCAVATION FIRST.

3. ALL BACKFILL MATERIALS SHALL BE PLACED IN LAYERS NOT MORE THAN 12 INCHES IN LOOSE DEPTH FOR MATERIAL COMPACTED BY HEAVY COMPACTION EQUIPMENT, UNLESS OTHERWISE SPECIFIED OR DIRECTED.

4. PRIOR TO PLACEMENT OF EITHER CLEAN SUBGRADE FILL OR CLEAN SOIL COVER MATERIAL ON TRACT II AREAS WHERE COMPOUNDS REMAIN IN EXCEEDANCE OF THE SCOs , A DEMARCATION LAYER CONSISTING OF A ORANGE WOVEN GEOTEXTILE MATERIAL OR ORANGE CONSTRUCTION FENCE SHALL BE PLACED OVER THE COMPLETED LEAD IMPACTED SOIL PLACEMENT.

GEOTECHNICAL AND ANALYTICAL SOIL TESTING:

1. SOIL TESTING INCLUDING GEOTECHNICAL AND ANALYTICAL SHALL BE CONDUCTED ON ALL SOIL MATERIALS PROPOSED FOR CONSTRUCTION FROM BOTH ON–SITE AND OFF–SITE SOURCES. THIRD–PARTY ANALYTICAL LABORATORY TESTING REQUIREMENTS SHALL BE COMPLETED IN ACCORDANCE WITH THE NYSDEC APPROVED WORK PLANS FOR TRACTS I AND II. THIRD–PARTY GEOTECHNICAL TESTING REQUIRMENTS SHALL BE COMPLETED IN ACCORDANCE WITH THE FOLLOWING TABLE.

MATERIAL	TEST	METHODOLOGY (1)	FREQUENCY (2)
IMPORTED BORROW, GRAVEL, AND PERMEABLE SOIL	PARTICLE-SIZE ANALYSIS	ASTM D 422	1 TEST / SOURCE / MATERIAL
	MODIFIED PROCTOR	ASTM D 1557	1 TEST / SOURCE / MATERIAL
ON-SITE EXCAVATION MATERIAL (REUSE SOIL - TRACT II ONLY)	PARTICLE-SIZE ANALYSIS	ASTM D 422	1 TEST / SOURCE / MATERIAL
	MODIFIED PROCTOR	ASTM D 1557	1 TEST / SOURCE / MATERIAL
POST-STABILIZED TCLP MATERIAL	PARTICLE-SIZE ANALYSIS	ASTM D 422	1 TEST / SOURCE / MATERIAL
	MODIFIED PROCTOR	ASTM D 1557	1 TEST / SOURCE / MATERIAL
LEAD IMPACTED MATERIAL	PARTICLE-SIZE ANALYSIS	ASTM D 422	1 TEST / SOURCE / MATERIAL
	MODIFIED PROCTOR	ASTM D 1557	1 TEST / SOURCE / MATERIAL
TOPSOIL (TRACT II ONLY)	GRAIN SIZE	ASTM D 422	1 TEST / SOURCE / MATERIAL
	PH	ASTM D 4972	1 TEST / SOURCE / MATERIAL
	ORGANIC PERCENT	ASTM D 2974	1 TEST / SOURCE / MATERIAL
3/8" CRUSHED STONE	GRAIN SIZE	ASTM D 422	1 TEST / SOURCE / MATERIAL

NOTES:

1. OTHER TESTING METHODS MAY BE CONSIDERED ACCEPTABLE, BASED ON PRIOR APPROVAL OF HONEYWELL.

2. TESTING FREQUENCY SHALL BE AS LISTED, AT ANY CHANGE IN BORROW SOURCE, OR AT ANY DISCERNABLE CHANGE IN MATERIAL DELIVERED TO THE SITE (AS DETERMINED BY HONEYWELL).

3. ANALYTICAL TESTING TO ENSURE CERTIFIED CLEAN MATERIAL SHALL BE CONDUCTED BY THE CONTRACTOR OF ALL MATERIALS PROVIDED FROM AN OFF–SITE BORROW SOURCE. HONEYWELL'S REPRESENTATIVE SHALL CONDUCT ANALYTICAL TESTING FOR ALL ON–SITE MATERIAL.

4. TESTING FREQUENCY FOR POST–STABLIZED TCLP MATERIAL MAY BE INCREASED BASED ON ACTUAL DAILY PRODUCTION RATES OR TRENDS OF COMPLIANCE ARE ESTABLISHED.

EARTHWORK CONT'D

COMPACTION:

1. BEFORE COMPACTION, MOISTEN OR AERATE EACH LAYER AS NECESSARY TO PROVIDE THE OPTIMUM MOISTURE CONTENT. COMPACT EACH LAYER TO THE REQUIRED 95 PERCENT OF MAXIMUM DRY DENSITY AS DETERMINED BY ASTM D 1557.

2. AT DEPTHS GREATER THAN FIVE (5) BELOW FINAL GRADE ELEVATION, STATIC METHODS OF COMPACTION MAY BE EMPLOYED USING EQUIPMENT CAPABLE OF PRODUCING A KNEADING ACTION APPLIED WITH PRESSURE (I.E. THE BUCKET OF THE EXCAVATOR MAY BE USED). THE MAXIMUM COMPACTED LIFT DEPTH SHALL BE 1 FOOT.

3. AT DEPTHS OF FIVE (5) FEET OR LESS BELOW FINAL GRADE ELEVATION, VIBRATORY METHODS OF COMPACTION SHALL BE EMPLOYED TO ACHIEVE THE SPECIFIED IN PLACE DENSITY.

FINAL GRADING:

1. THE CONTRACTOR SHALL UNIFORMLY GRADE AREAS WITHIN THE LIMITS OF WORK. SMOOTH FINISHED SURFACE WITHIN SPECIFIED TOLERANCES, COMPACT WITH UNIFORM LEVELS OR SLOPES BETWEEN POINTS WHERE ELEVATIONS ARE SHOWN, OR BETWEEN SUCH POINTS AND EXISTING GRADES.

2. FINISH SURFACES TO BE FREE FROM IRREGULAR SURFACE CHANGES AND NOT MORE THAN ONE (1) INCH ABOVE OR BELOW THE REQUIRED FINAL GRADE ELEVATION.

3. PROTECT NEWLY GRADED AREAS FROM TRAFFIC AND EROSION. KEEP FREE OF TRASH AND DEBRIS. REPAIR AND RE–ESTABLISH GRADES IN SETTLED, ERODED, AND RUTTED AREAS TO SPECIFIED TOLERANCES.

FIELD QUALITY CONTROL TESTING DURING CONSTRUCTION:

1. ALLOW TESTING SERVICE TO EXAMINE AND TEST SUBGRADE SURFACES AND FILL/BACKFILL LAYERS. BEFORE FURTHER CONSTRUCTION WORK IS PERFORMED, COMPACTION TEST RESULTS MEETING THESE SPECIFICATIONS SHALL BE OBTAINED.

2. THE CONTRACTOR SHALL PERFORM FIELD DENSITY TESTS IN ACCORDANCE WITH ASTM D 6938 (NUCLEAR METHOD), OR OTHER HONEYWELL'S REPRESENTATIVE APPROVED METHODS, AS APPLICABLE. DUE TO THE POTENTIAL IMPACT OF CEMENT USED TO STABILIZE LEAD IMPACTED SOIL OR THE PRESENCE OF RADIOLOGICAL BACKGROUND MATERIAL, FIELD DENSITY TESTING USING ASTM D 6938 METHODS MAY REQUIRE CALIBRATION USING OTHER METHODS (I.E. SAND CONE METHOD PER ASTM D 1556) OR MAY BE UNRELIABLE. AN ACCEPTABLE ALTERNATIVE IS DYNAMIC CONE PENETROMETER (DCP) TESTING PER ASTM D 6951 METHOD. IF DCP TESTING IS CONDUCTED THE SPECIFICATIONS OF THE TESTING APPARATUS INCLUDING THE MANUFACTURER, MODEL NUMBER AND HAMMER MASS SHOULD BE DOCUMENTED AND THE PASSING CRITERIA SHALL BE 15 BLOWS PER 6 INCHES.

a. GENERAL AREAS: FOR EACH LAYER OF FILL PLACED, CONDUCT ONE COMPACTION TEST FOR EVERY 2000 SQUARE FEET, BUT IN NO CASE LESS THAN 3 TESTS PER LIFT.

b. PIPE/CONDUIT TRENCHES: FOR EACH LAYER OF FILL PLACED, CONDUCT ONE COMPACTION TEST FOR EVERY 100 LINEAR FEET OF TRENCH.

3. IF IN OPINION OF HONEYWELL'S REPRESENTATIVE, BASED ON TESTING SERVICE REPORTS AND INSPECTION, SUBGRADE OR FILLS WHICH HAVE BEEN PLACED ARE BELOW SPECIFIED DENSITY, PROVIDE ADDITIONAL COMPACTION AND TESTING AT NO ADDITIONAL EXPENSE TO THE OWNER.

SUBMITTALS

1. SUBMIT TO THE HONEYWELL'S REPRESENTATIVE FOR APPROVAL THE FOLLOWING PLANS AND MATERIALS:

2. WORK PLANS AND SCHEDULES: CONSTRUCTION WORK PLAN (INCLUDING MATERIALS MANAGEMENT PLAN), HEALTH AND SAFETY PLAN, A CONTINGENCY PLAN, CONTRACTOR QUALITY ASSURANCE/QUALITY CONTROL PLAN, TRAFFIC CONTROL PLAN, AND CONSTRUCTION SCHEDULE.

3. SOIL MATERIAL BORROW SOURCES – THE CONTRACTOR SHALL PROVIDE THE PROPOSED SOURCE(S) FOR OFFSITE SOIL BORROW MATERIALS PRIOR TO DELIVERING MATERIALS TO THE SITE. AVAILABLE/PREVIOUS LABORATORY TESTING DATA SHALL BE PROVIDED.

4. CONTRACTOR'S QUALITY CONTROL TESTING LABORATORY – THE NAME AND QUALIFICATIONS OF AN INDEPENDENT THIRD–PARTY COMMERCIAL TESTING LABORATORY TO BE USED FOR BORROW SOURCE AND IN–PLACE SOIL/CONSTRUCTION MATERIALS TESTING.

5. BORROW SOURCE TEST REPORTS – ALL TEST REPORTS FOR BORROW SOURCE MATERIALS, INCLUDING AT LEAST ONE MOISTURE DENSITY CURVE FOR EACH TYPE OF BORROW SOURCE MATERIAL AND NATIVE SOIL TO BE UTILIZED. FIELD IN–PLACE DENSITY (COMPACTION) TEST REPORTS.

6. SURVEYS – WASTE AND IMPACTED SOIL EXCAVATIONS LIMITS; AS–BUILT CONDITIONS FOR THE DISPOSAL CELL AND STORM DRAIN PIPING AND STRUCTURES, AND FINAL GRADES; AS WELL AS CONSTRUCTIONS SURVEYS CONDUCTED FOR QUANTITY MEASUREMENTS.

7. MANUFACTURER DATA FOR: STORM DRAIN AND UNDER DRAIN PIPING; PRECAST CONCRETE STORM DRAIN STRUCTURES; AND CAST IRON FRAMES, COVERS AND GRATES.

8. THE CONTRACTOR SHALL PLAN MEANS AND METHODS FOR TRANSPORTING AND DISPOSING OF ALL WASTE MATERIALS REMOVED OR GENERATED AS A COMPONENT OF THE WORK, INCLUDING PROPOSED DISPOSAL FACILITIES ALONG WITH THE PERMITTED PROFILE OF THE FACILITY.

9. BILL OF LADING AND MANIFESTS FOR ALL TRANSPORTED WASTE LOADS AND CERTIFIED WEIGHT SLIPS FOR EACH LOAD TRANSPORTED TO THE DISPOSAL FACILITY.

NO.	DATE	REVISION	CHK	APVD
C	8/6/13	REVISED PER NYSEDEC COMMENTS ON TRACT I IRM WP	TDD	SCP
B	6/3/13	100% REMEDIAL DESIGN DRAWINGS	TDD	SCP
A	4/8/13	DRAFT 100% REMEDIAL DESIGN DRAWINGS	TDD	SCP
DSGN		DR TDD	MAP	BY APVD

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GENERAL PROJECT SPECIFICATIONS

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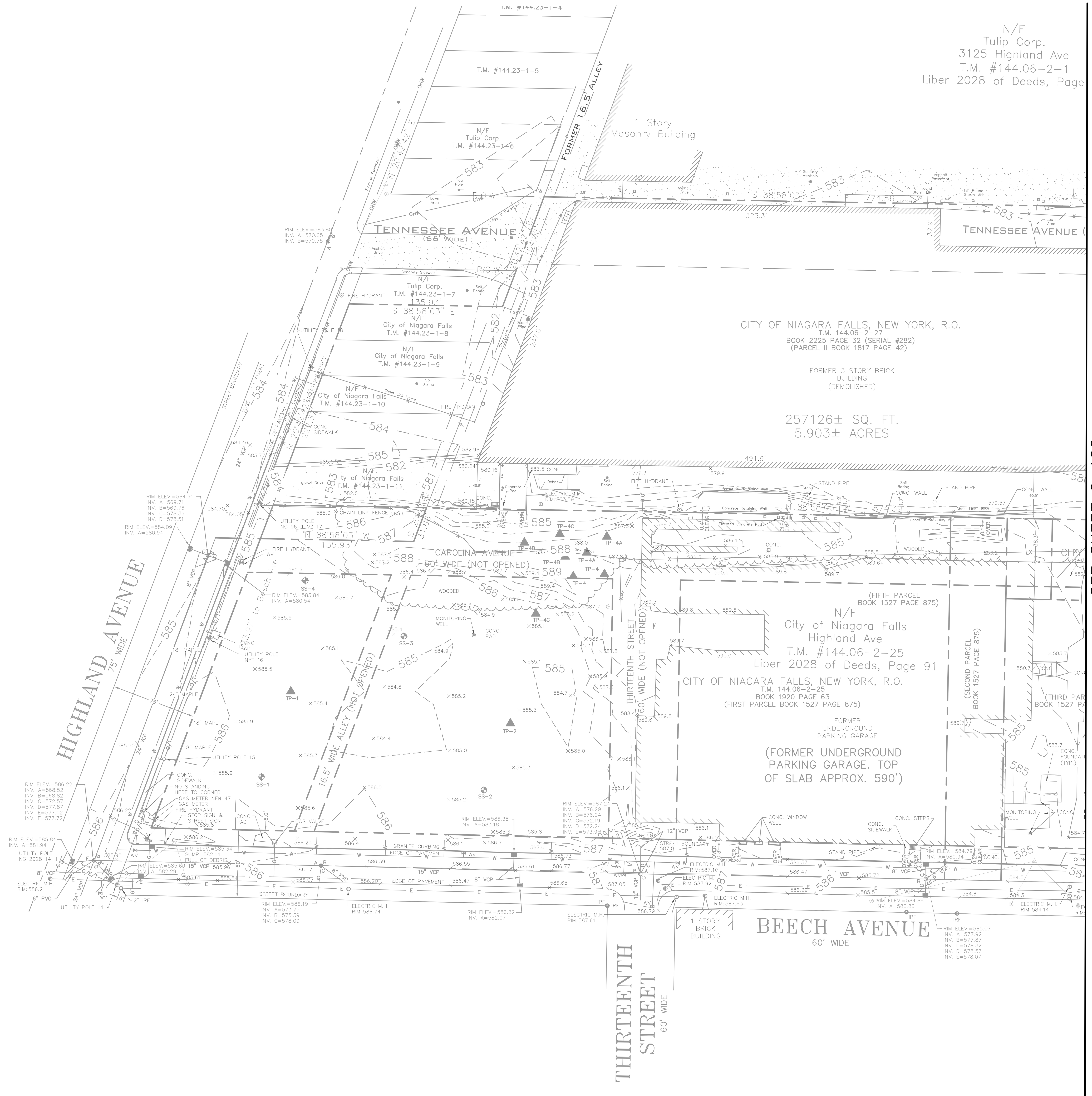
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	3/06/13
PROJ	3410-11-0832
DWG	G-004
SHEET	4 OF 28



NOTES:

1. SEE SHEET G-002 FOR LEGEND ABBREVIATIONS AND GENERAL NOTES.

2. SEE SHEET G-003 AND G-004 FOR GENERAL PROJECT SPECIFICATIONS.

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NO.	DATE	REVISION	BY	APVD
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EXISTING CONDTIONS PLAN

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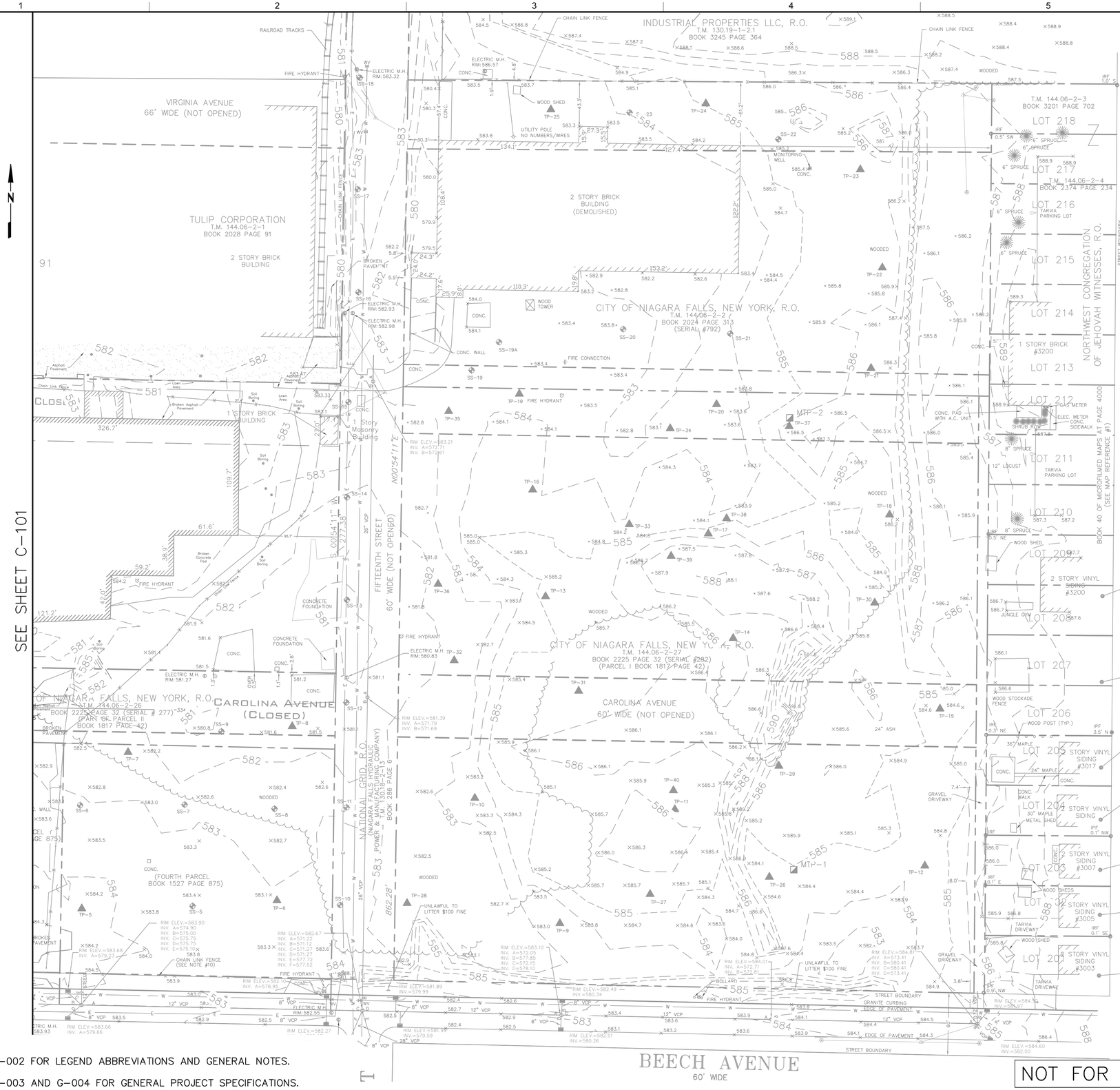
0 1"

DATE	3/06/13
PROJ	3410-11-0832
DWG	C-101
SHEET	5 OF 28



NOTES:

1. SEE SHEET G-002 FOR LEGEND ABBREVIATIONS AND GENERAL NOTES.
2. SEE SHEET G-003 AND G-004 FOR GENERAL PROJECT SPECIFICATIONS.

NOT FOR CONSTRUCTION

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SCALE IN FEET

NO.	DATE	REVISION	BY	APVD
C	8/6/13	REVISED PER NYSEDEC COMMENTS ON TRACT I IRM WP	TDD	SCP
B	6/3/13	100% REMEDIAL DESIGN DRAWINGS	TDD	SCP
A	4/18/13	DRAFT 100% REMEDIAL DESIGN DRAWINGS	TDD	SCP
DSGN	TDD	DR TDD CHK MAP		APVD SCP

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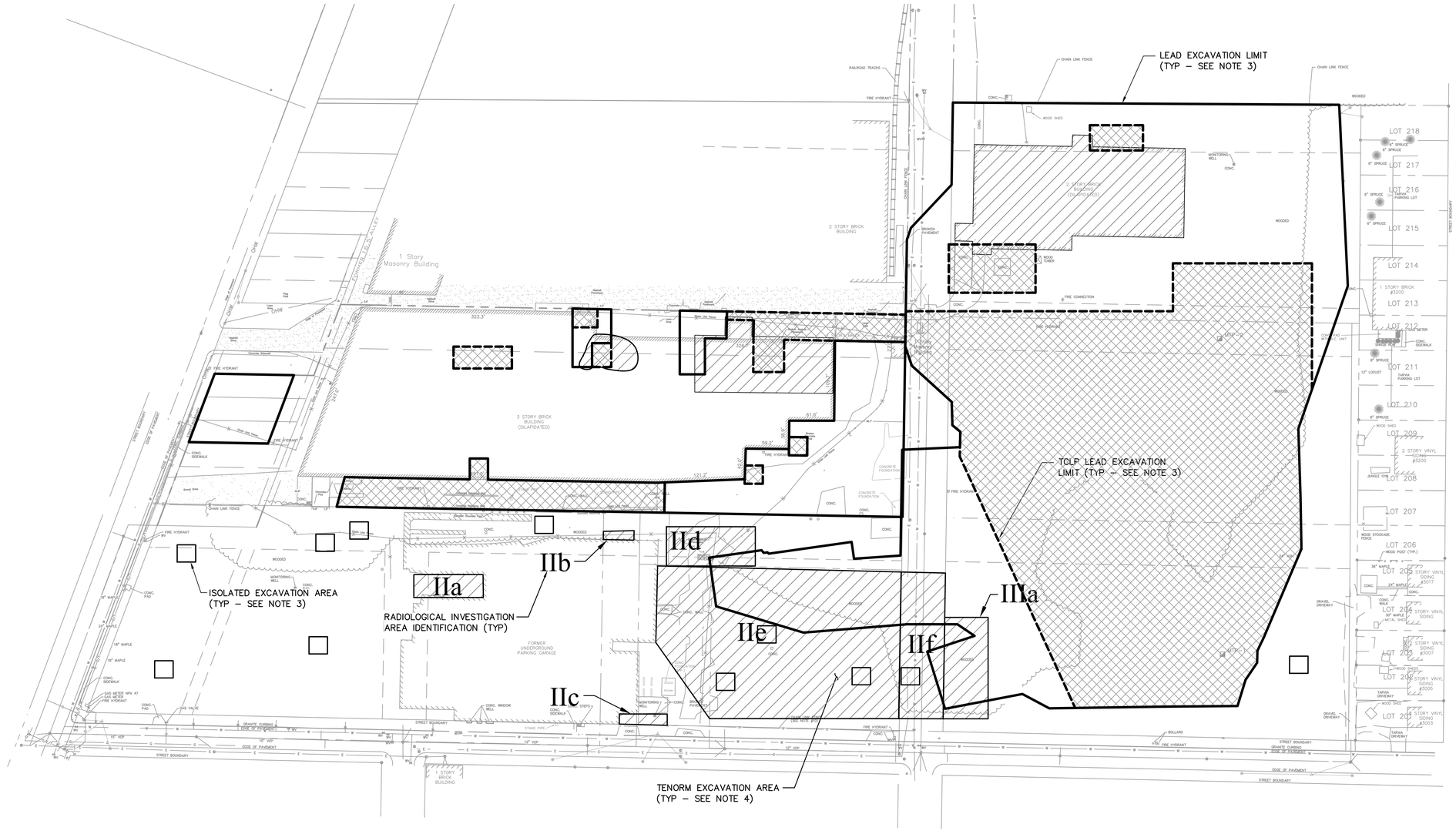
DATE	3/06/13
PROJ	3410-11-0832
DWG	C-102
SHEET	6 OF 28

FILE NAME: Z:\Projects\HONEYWELL\Niagara Falls\Issued for Construction\Tract I Revised IRM WP Drawings\TRACT I IRM C-102 Existing Conditions.dwg PLOT DATE: Tue, 06 Aug 2013 PLOT TIME: 10:20 AM



NOTES:

1. SEE SHEET G–002 FOR LEGEND ABBREVIATIONS AND GENERAL NOTES.
2. SEE SHEETS G–003 AND G–004 FOR GENERAL PROJECT SPECIFICATIONS.
3. REFER TO SHEETS C–106 THRU C–112 FOR IMPACTED SOIL REMOVAL REQUIREMENTS.
4. REFER TO EARTHWORK SPECIFICATION ON SHEET G–004 FOR TENORM SOIL REMOVAL AND SCREENING REQUIREMENTS.

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0 40 80 160
SCALE IN FEET

NO.	DATE	DSGN	DR	CHK	APVD
C	8/6/13	REVISED PER NYSEDEC COMMENTS ON TRACT I IRM WP	TDD	TDD	SCP
B	6/3/13	100% REMEDIAL DESIGN DRAWINGS	TDD	SCP	
A	4/8/13	DRAFT 100% REMEDIAL DESIGN DRAWINGS	TDD	SCP	
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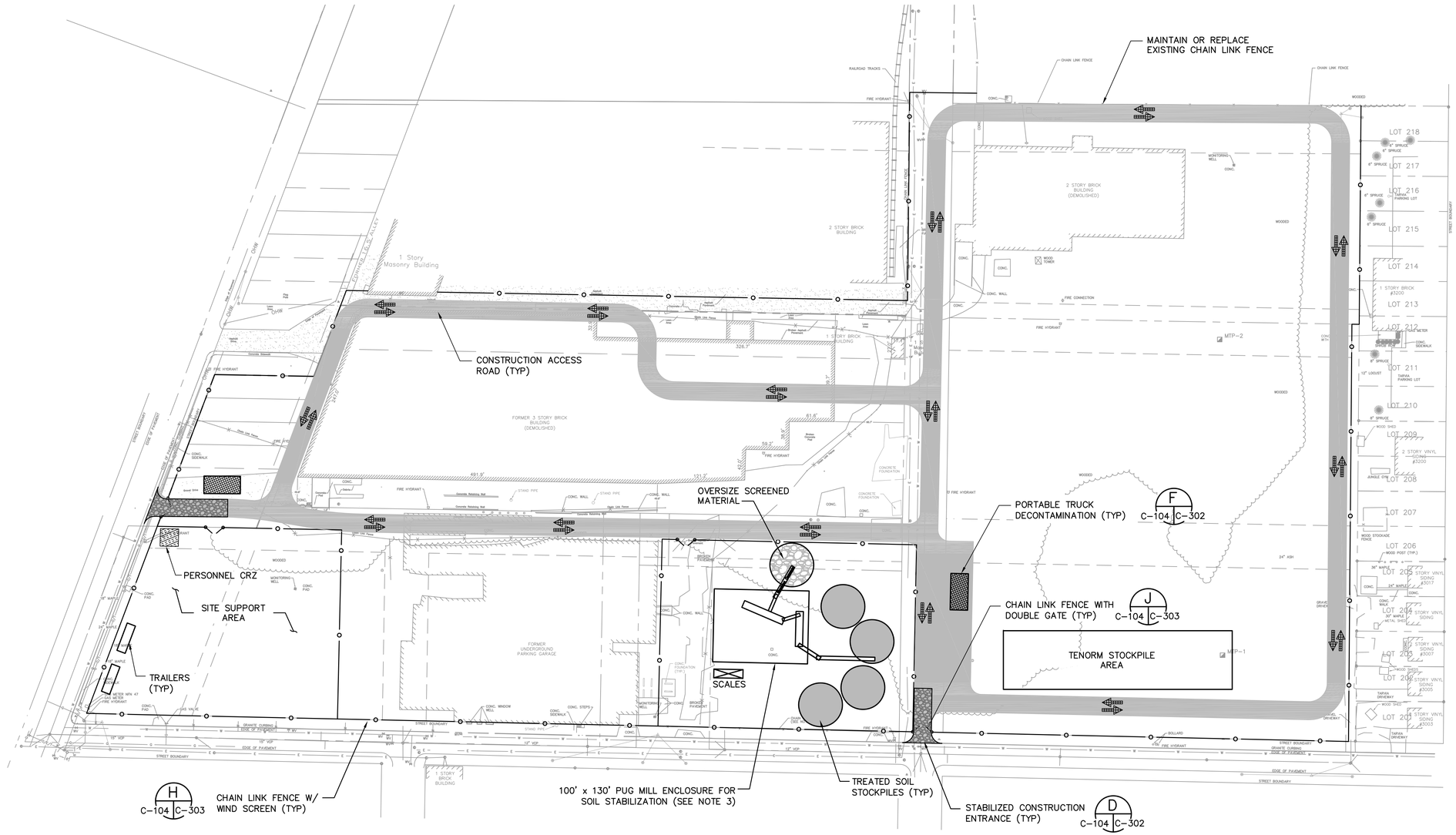
DATE	3/06/13
PROJ	3410-11-0832
DWG	C-103
SHEET	7 OF 28



NOTES:

1. SEE SHEET G–002 FOR LEGEND ABBREVIATIONS AND GENERAL NOTES.
2. SEE SHEET G–003 AND G–004 FOR GENERAL PROJECT SPECIFICATIONS.
3. ALL SOIL TREATMENT PROCESSES SHALL BE COMPLETED WITHIN AN ENCLOSED STRUCTURE MAINTAINING NEGATIVE PRESSURE TO MINIMIZE ANY DUST EMISSIONS DURING SOIL STABILIZATION.
4. PROPOSED ACCESS AND STAGING SHOWN IS CONCEPTUAL AND SUBJECT TO MODIFICATION AS WORK PROGRESSES IN ORDER TO COMPLETE THE NECESSARY REMEDIAL ACTIVITIES.

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0 40 80 160
SCALE IN FEET

NO.	DATE	REVISION	DR	CHK	APVD
C	8/6/13	REVISED PER NYSEDEC COMMENTS ON TRACT I IRM WP	TDD	TDD	SCP
B	6/3/13	100% REMEDIAL DESIGN DRAWINGS	TDD	MAP	SCP
A	4/8/13	DRAFT 100% REMEDIAL DESIGN DRAWINGS	TDD	BY	APVD
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OVERALL ACCESS AND STAGING PLAN

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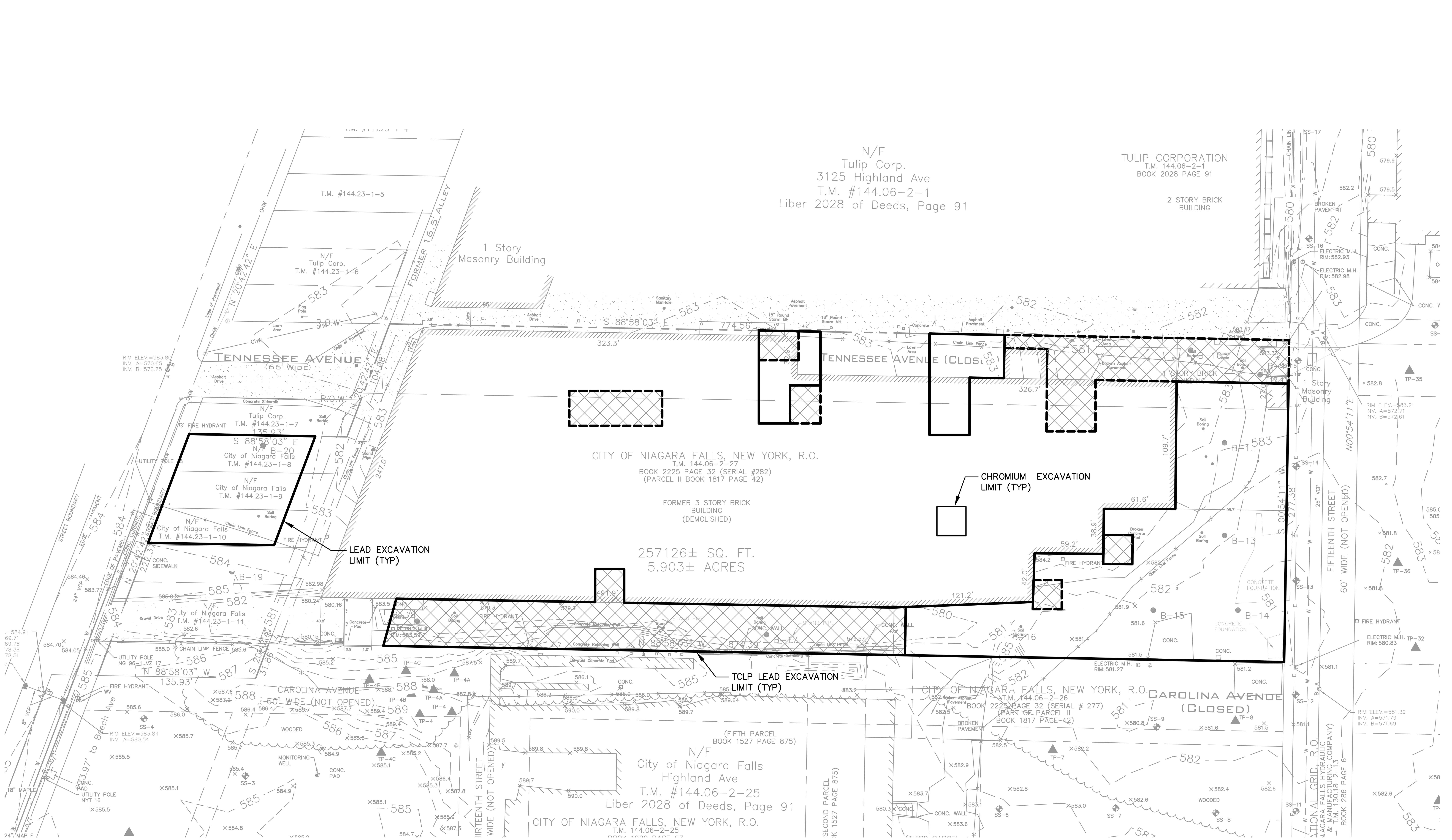
0 1"

DATE	3/06/13
PROJ	3410-11-0832
DWG	C-104
SHEET	8 OF 28

FILE NAME: Z:\Projects\HONEYWELL\Niagara Falls\Issued for Construction\Tract I Revised IRM WP Drawings\TRACT I IRM C-104 Overall Access and Staging Plan.dwg PLOT DATE: Tue, 06 Aug 2013 PLOT TIME: 11:13 AM



NOTES:

1. SEE SHEET G-002 FOR LEGEND ABBREVIATIONS AND GENERAL NOTES.

2. SEE SHEET G-003 AND G-004 FOR GENERAL PROJECT SPECIFICATIONS.

3. IMPACTED SOIL SHOWN ON THIS DRAWING SHALL BE REMOVED FROM EXISTING GRADE TO 2 FEET BELOW GROUND SURFACE.

NOT FOR CONSTRUCTION

0 25 50 100
SCALE IN FEET

NO.	DATE	REVISION	BY	APVD
C	8/6/13	REVISED PER NYSEDEC COMMENTS ON TRACT I IRM WP	TDD	SCP
B	6/3/13	100% REMEDIAL DESIGN DRAWINGS	TDD	SCP
A	4/8/13	DRAFT 100% REMEDIAL DESIGN DRAWINGS	TDD	SCP

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TRACT I EXCAVATION PLAN 0 TO 2 FEET BGS

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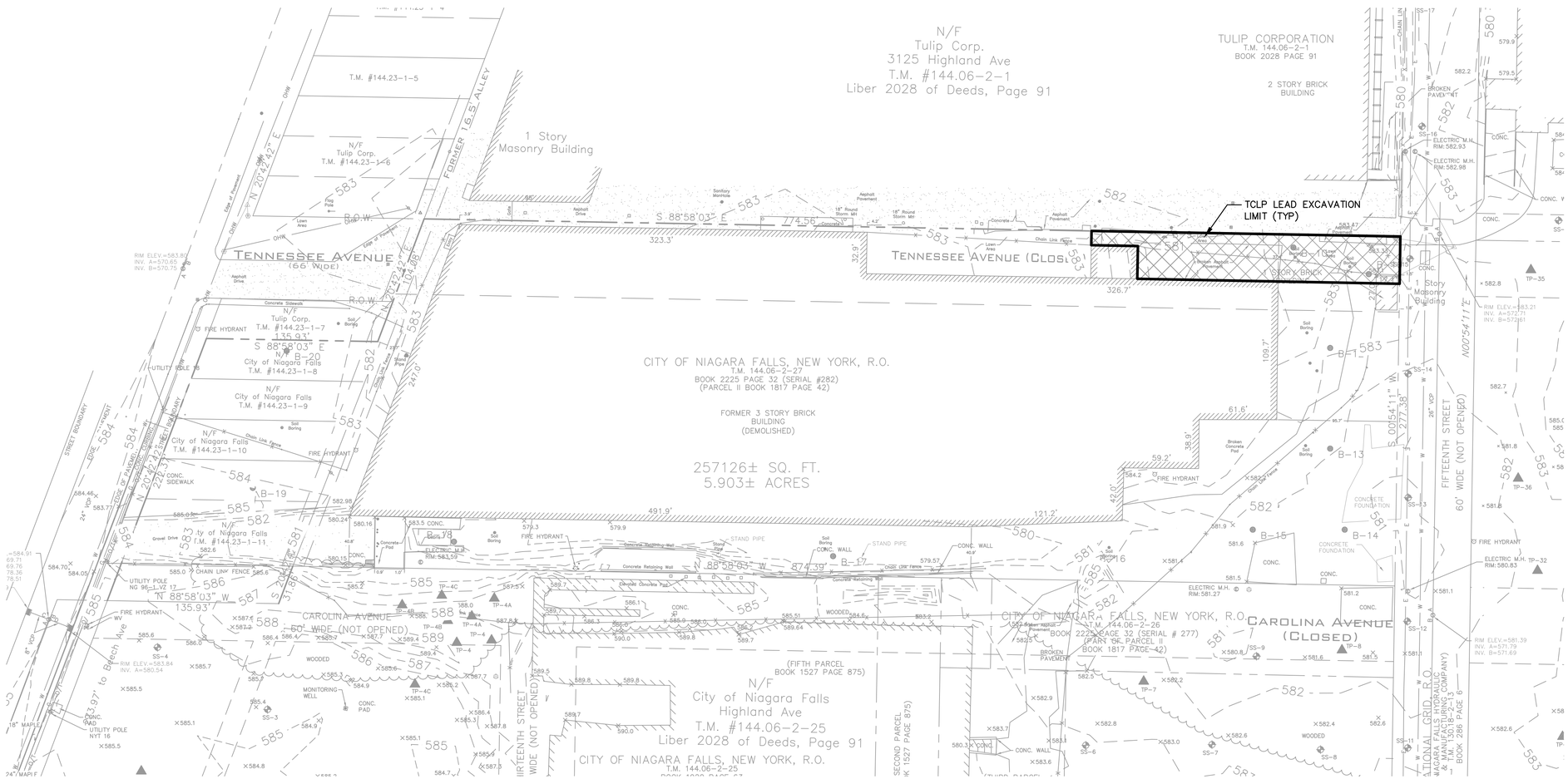
0 1"

DATE	3/06/13
PROJ	3410-11-0832
DWG	C-111
SHEET	15 OF 28

FILE NAME: Z:\Projects\HONEYWELL\Niagara Falls\Issued for Construction\Tract I Revised IRM WP Drawings\TRACT I IRM C-111 TRACT I Excavation Plan 0 TO 2 FEET BGS.dwg PLOT DATE: Tue, 06 Aug 2013 PLOT TIME: 11:14 AM



NOTES:

1. SEE SHEET G–002 FOR LEGEND ABBREVIATIONS AND GENERAL NOTES.
2. SEE SHEET G–003 AND G–004 FOR GENERAL PROJECT SPECIFICATIONS.
3. IMPACTED SOIL SHOWN ON THIS DRAWING SHALL BE REMOVED FROM 2 TO 4 FEET BELOW GROUND SURFACE.

NOT FOR CONSTRUCTION

0 25 50 100
SCALE IN FEET

NO.	DATE	DSGN	DR	CHK	APVD	MAP	BY	APVD
C	8/6/13	REVISED PER NYSEDEC COMMENTS ON TRACT I IRM WP	TDD	TDD			TDD	SCP
B	6/3/13	100% REMEDIAL DESIGN DRAWINGS					TDD	SCP
A	4/18/13	DRAFT 100% REMEDIAL DESIGN DRAWINGS					TDD	SCP

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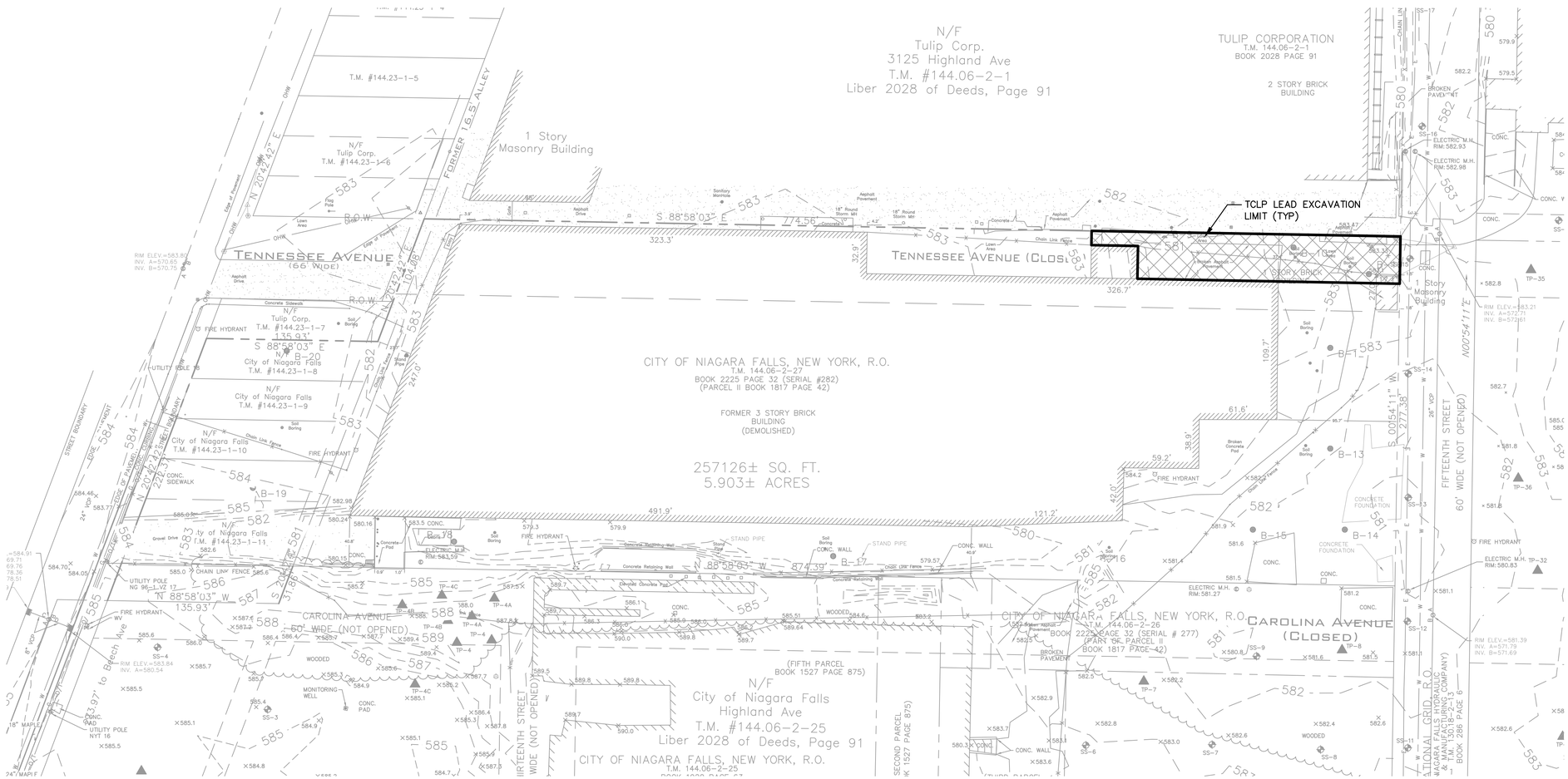
100% REMEDIAL DESIGN DRAWINGS
TRACTS I AND II HIGHLAND AVENUE
NIAGARA FALLS, NEW YORK
SITES C932157 AND 932136

TRACT I
EXCAVATION PLAN
2 TO 4 FEET BGS

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	3/06/13
PROJ	3410-11-0832
DWG	C-112
SHEET	16 OF 28

FILE NAME: Z:\Projects\HONEYWELL\Niagara Falls\Issued for Construction\Tract I Revised IRM WP Drawings\TRACT I IRM C-112 TRACT I Excavation Plan 2 TO 4 FEET BGS.dwg PLOT DATE: Tue, 06 Aug 2013 PLOT TIME: 11:15 AM



NOTES:

1. SEE SHEET G–002 FOR LEGEND ABBREVIATIONS AND GENERAL NOTES.
2. SEE SHEET G–003 AND G–004 FOR GENERAL PROJECT SPECIFICATIONS.
3. IMPACTED SOIL SHOWN ON THIS DRAWING SHALL BE REMOVED FROM 4 TO 6 FEET BELOW GROUND SURFACE.

NOT FOR CONSTRUCTION

0 25 50 100
SCALE IN FEET

NO.	DATE	DSGN	DR	CHK	APVD	MAP	REVISION
C	8/6/13	TDD	TDD		SCP		REVISED PER NYSEDEC COMMENTS ON TRACT I IRM WP
B	6/3/13				SCP		100% REMEDIAL DESIGN DRAWINGS
A	4/8/13				SCP		DRAFT 100% REMEDIAL DESIGN DRAWINGS

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NIAGARA FALLS, NEW YORK
SITES C932157 AND 932136

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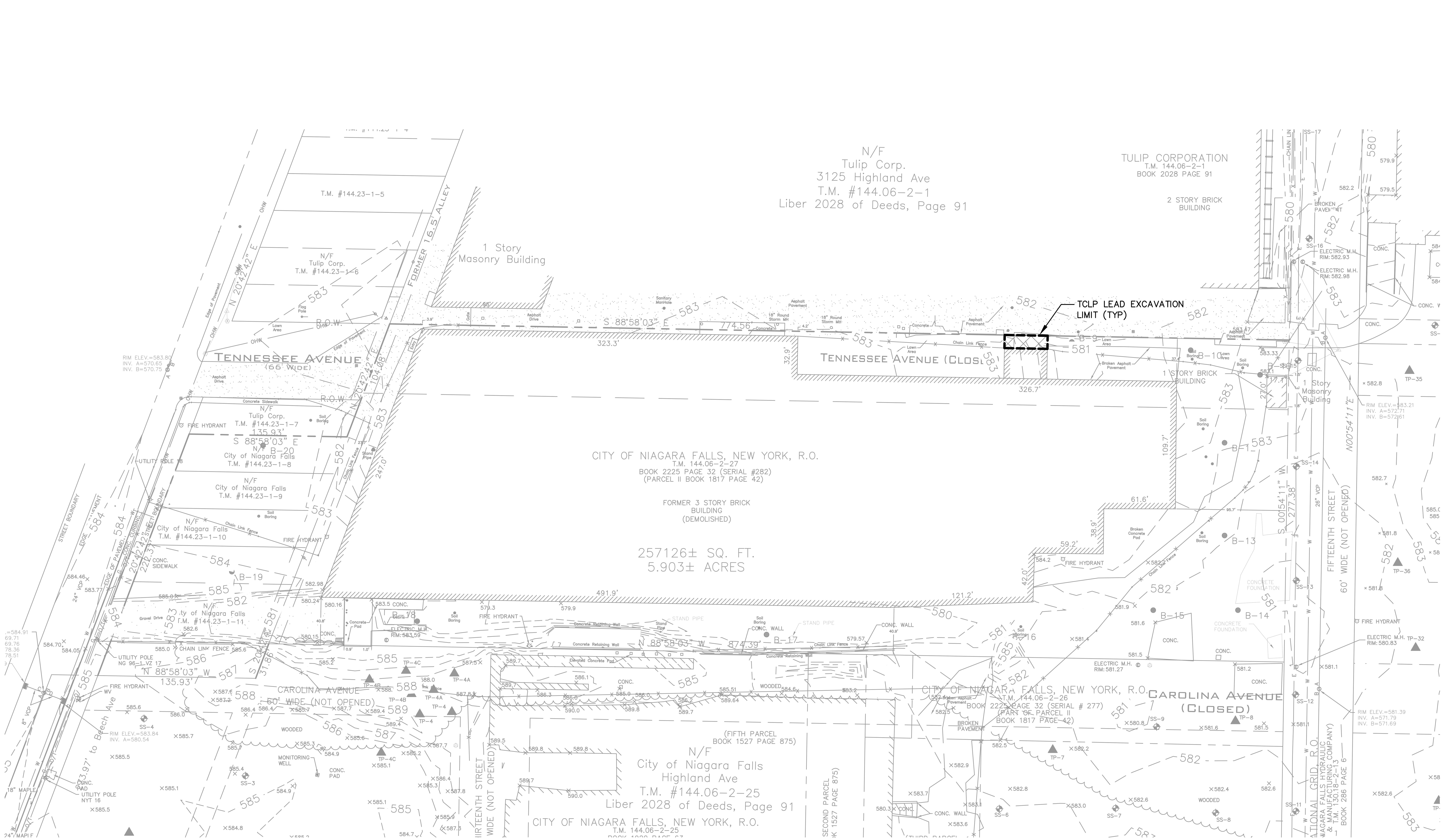
TRACT I
EXCAVATION PLAN
4 TO 6 FEET BGS

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	3/06/13
PROJ	3410-11-0832
DWG	C-113
SHEET	17 OF 28

FILE NAME: Z:\Projects\HONEYWELL\Niagara Falls\Issued for Construction\Tract I Revised IRM WP Drawings\TRACT I IRM C-113 TRACT I Excavation Plan 4 TO 6 FEET BGS.dwg PLOT DATE: Tue, 06 Aug 2013 PLOT TIME: 11:16 AM



NOTES:

1. SEE SHEET G–002 FOR LEGEND ABBREVIATIONS AND GENERAL NOTES.
2. SEE SHEET G–003 AND G–004 FOR GENERAL PROJECT SPECIFICATIONS.
3. IMPACTED SOIL SHOWN ON THIS DRAWING SHALL BE REMOVED FROM 6 TO 8 FEET BELOW GROUND SURFACE.

NOT FOR CONSTRUCTION

0 25 50 100
SCALE IN FEET

NO.	DATE	REVISION	BY	APVD
C	8/6/13	REVISED PER NYSEDEC COMMENTS ON TRACT I IRM WP	TDD	SCP
B	6/3/13	100% REMEDIAL DESIGN DRAWINGS	TDD	SCP
A	4/8/13	DRAFT 100% REMEDIAL DESIGN DRAWINGS	TDD	SCP

DSGN	DR	CHK	APVD
TDD	TDD	MAP	SCP

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TRACT I EXCAVATION PLAN 6 TO 8 FEET BGS

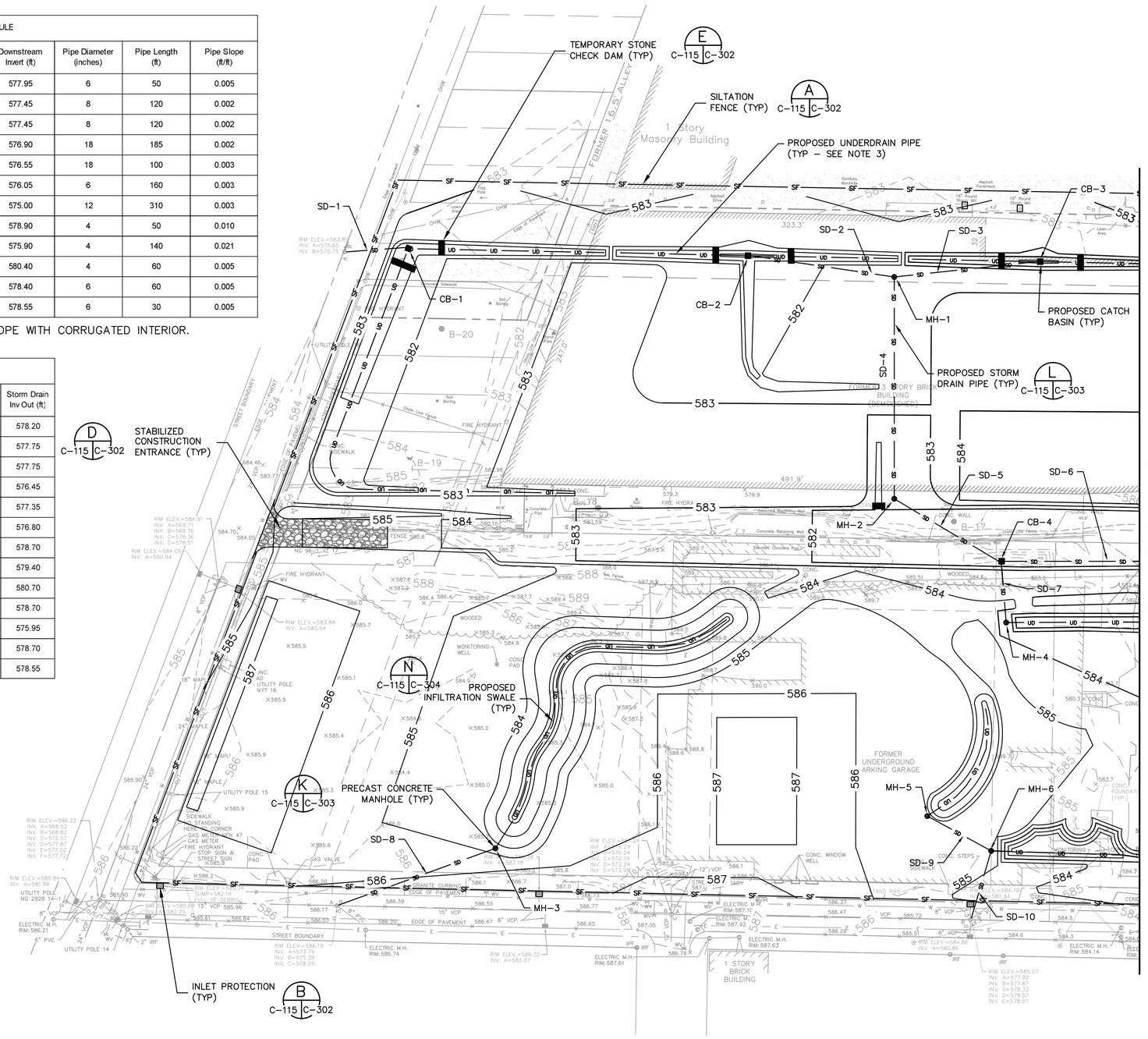
VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	3/06/13
PROJ	3410-11-0832
DWG	C-114
SHEET	18 OF 28

STORM DRAIN SCHEDULE							
Drainage Pipe Identification	Upstream Structue	Upstream Invert (ft)	Downstream Structure	Downstream Invert (ft)	Pipe Diameter (inches)	Pipe Length (ft)	Pipe Slope (ft/ft)
SD-1	CB-1	578.20	EX-MH	577.95	6	50	0.005
SD-2	CB-2	577.75	MH-1	577.45	8	120	0.002
SD-3	CB-3	577.75	MH-1	577.45	8	120	0.002
SD-4	MH-1	577.35	MH-2	576.90	18	185	0.002
SD-5	MH-2	576.80	CB-4	576.55	18	100	0.003
SD-6	CB-4	576.45	MH-7	576.05	6	160	0.003
SD-6A	MH-7	575.95	EX-MH	575.00	12	310	0.003
SD-7	MH-4	579.40	CB-4	578.90	4	50	0.010
SD-8	MH-3	578.80	EX-MH	575.90	4	140	0.021
SD-9	MH-5	580.70	MH-6	580.40	4	60	0.005
SD-10	MH-6	578.70	EX-MH	578.40	6	60	0.005
SD-11	MH-8	578.70	EX-MH	578.55	6	30	0.005

NOTE: ALL STORM DRAIN PIPE SHALL BE SINGLE WALL HDPE WITH CORRUGATED INTERIOR.

STORM STRUCTURE LAYOUT SCHEDULE					
Structure Identification	Rim Elevation (ft)	Under Drain Inv In (ft)	Storm Drain Inv In (ft)	Storm Drain Inv In (ft)	Storm Drain Inv Out (ft)
CB-1	580.30	578.30	-	-	578.20
CB-2	579.85	577.85	-	-	577.75
CB-3	579.85	576.85	-	-	577.75
CB-4	581.20	-	576.55	576.55	576.45
MH-1	583.00	-	577.45	577.45	577.35
MH-2	583.00	-	576.90	-	576.80
MH-3	584.50	578.80	-	-	578.70
MH-4	583.50	579.50	-	-	579.40
MH-5	585.10	580.80	-	-	580.70
MH-6	585.10	578.80	580.40	-	578.70
MH-7	581.80	-	576.05		575.95
MH-8	583.50	578.80	-	-	578.70
MH-9	583.10	578.65	-	-	578.55



NOTES:

1. SEE SHEET G–002 FOR LEGEND ABBREVIATIONS AND GENERAL NOTES.
2. SEE SHEET G–003 AND G–004 FOR GENERAL PROJECT SPECIFICATIONS.
3. UNDERDRAIN SHALL BE 4–INCH PERFORATED HDPE AND CONSTRUCTED IN ACCORDANCE WITH DETAIL N ON SHEET C–304.

NOT FOR CONSTRUCTION

0 25 50 100
SCALE IN FEET

DSGN	NO.	DATE	REVISION	DR	CHK	APVD
TDD	C	8/6/13	REVISED PER NYSEDEC COMMENTS ON TRACT I IRM WP	TDD	MAP	SCP
	B	6/3/13	100% REMEDIAL DESIGN DRAWINGS	TDD	SCP	
	A	4/8/13	DRAFT 100% REMEDIAL DESIGN DRAWINGS	TDD	SCP	

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100% REMEDIAL DESIGN DRAWINGS
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SITES C932157 AND 932136

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FINAL GRADE AND EROSION SEDIMENT CONTROL PLAN

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	3/06/13
PROJ	3410-11-0832
DWG	C-115
SHEET	19 OF 28

FILE NAME: Z:\Projects\HONEYWELL\Niagara Falls\Issued for Construction\Tract I Revised IRM WP Drawings\TRACT I IRM C-115 Final Grade Erosion Control Plan.dwg PLOT DATE: Tue, 06 Aug 2013 PLOT TIME: 11:17 AM

NOTES:

1. SEE SHEET G–002 FOR LEGEND ABBREVIATIONS AND GENERAL NOTES.
2. SEE SHEET G–003 AND G–004 FOR GENERAL PROJECT SPECIFICATIONS.
3. UNDERDRAIN SHALL BE 4–INCH PERFORATED HDPE AND CONSTRUCTED IN ACCORDANCE WITH DETAIL N ON SHEET C–304.
4. REFER TO SHEET C–115 FOR PROPOSED STORM DRAIN DESIGN SCHEDULE.

SEE SHEET C–115

PROPOSED BERM SHALL BE CONSTRUCTED FROM MATERIAL MEETING THE COMMERCIAL SCOs (TYP)

NOT FOR CONSTRUCTION

0 25 50 100
SCALE IN FEET

NO.	DATE	REVISION	DR	CHK	APVD
C	8/6/13	REVISED PER NYSEDEC COMMENTS ON TRACT I IRM WP	TDD	SCP	SCP
B	6/3/13	100% REMEDIAL DESIGN DRAWINGS	TDD	SCP	
A	4/18/13	DRAFT 100% REMEDIAL DESIGN DRAWINGS	TDD	SCP	
DSGN			TDD	MAP	APVD

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SITES C932157 AND 932136

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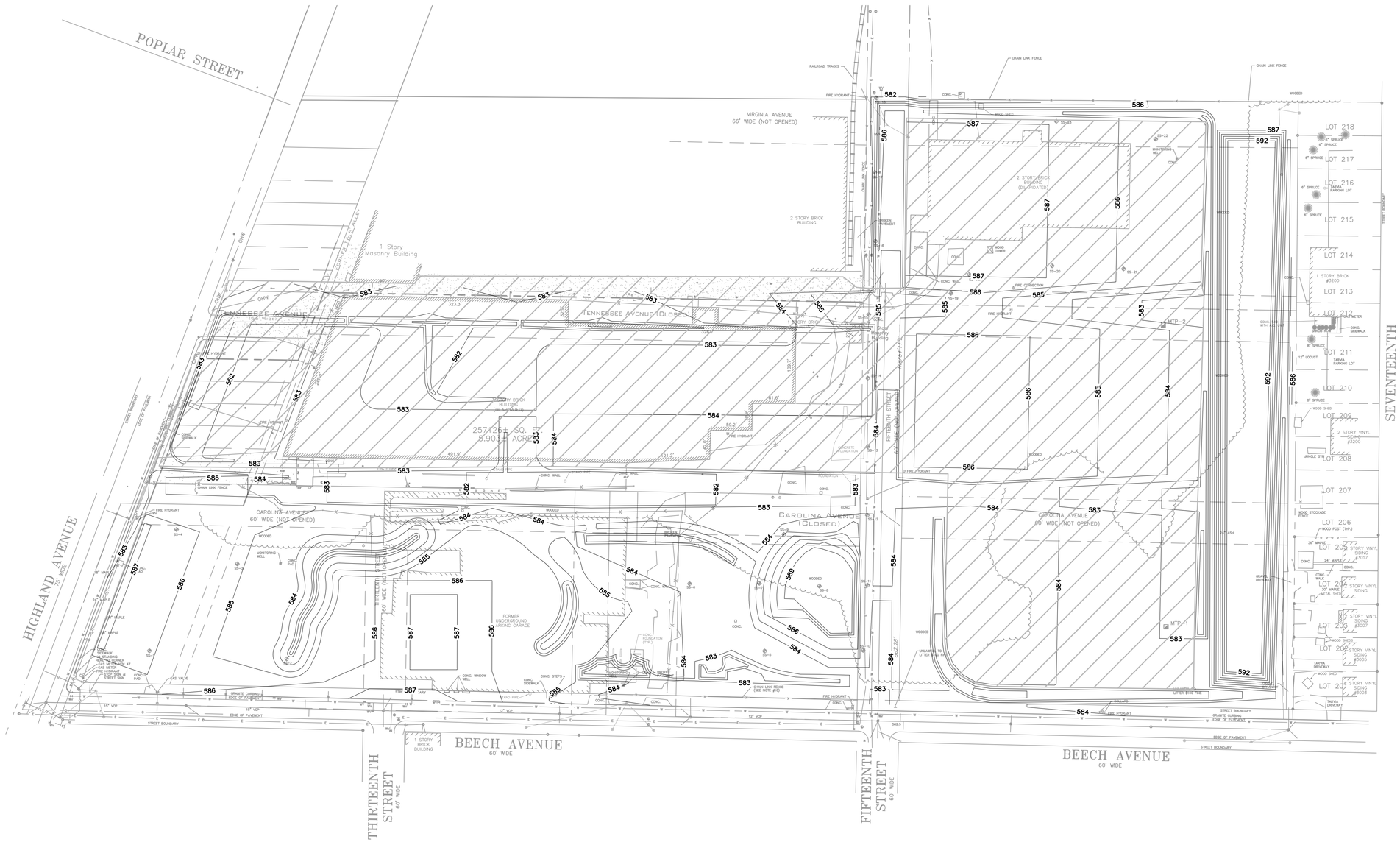
FINAL GRADE AND EROSION SEDIMENT CONTROL PLAN

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	3/06/13
PROJ	3410-11-0832
DWG	C-116
SHEET	20 OF 28

FILE NAME: Z:\Projects\HONEYWELL\Niagara Falls\Issued for Construction\Tract I Revised IRM WP Drawings\TRACT I IRM C-116 Final Grade Erosion Control Plan.dwg PLOT DATE: Tue, 06 Aug 2013 PLOT TIME: 11:24 AM



NOTES:

1. SEE SHEET G-002 FOR LEGEND ABBREVIATIONS AND GENERAL NOTES.
2. SEE SHEET G-003 AND G-004 FOR GENERAL PROJECT SPECIFICATIONS.

LEGEND

PROPOSED GRAVEL SURFACE
(SEE DETAIL M ON SHEET C-304)

NOT FOR CONSTRUCTION

0 40 80 160
SCALE IN FEET

NO.	DATE	DSGN	DR	CHK	APVD
C	8/6/13	REVISED PER NYSEDEC COMMENTS ON TRACT I IRM WP	TDD	SCP	
B	6/3/13	100% REMEDIAL DESIGN DRAWINGS	TDD	SCP	
A	4/8/13	DRAFT 100% REMEDIAL DESIGN DRAWINGS	TDD	SCP	
		REVISION	BY	APVD	
			TDD	MAP	SCP

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Portland, Maine 04101
(207) 775-5401

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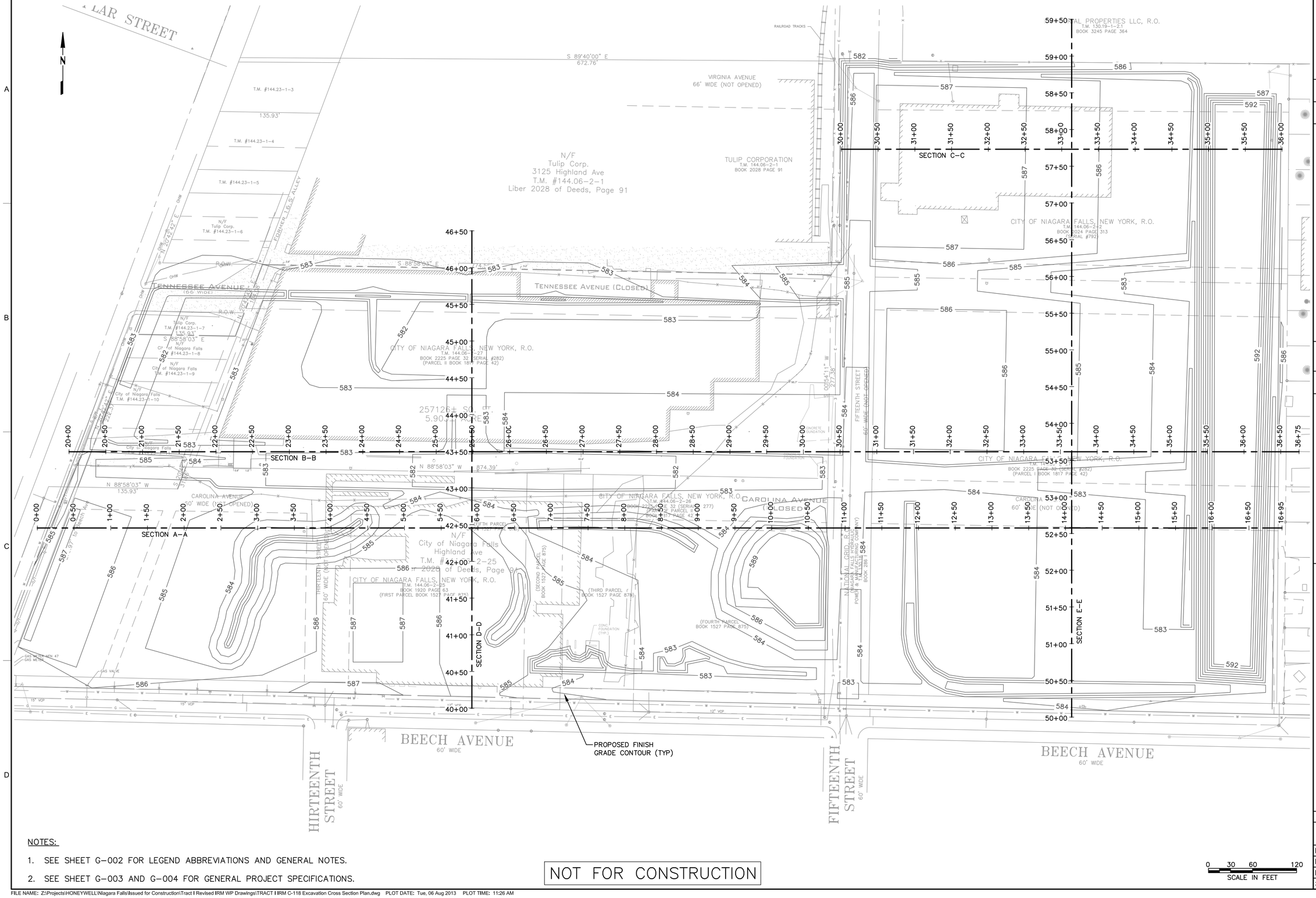
FINAL SURFACING PLAN

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	3/06/13
PROJ	3410-11-0832
DWG	C-117
SHEET	21 OF 28

FILE NAME: Z:\Projects\HONEYWELL\Niagara Falls\Issued for Construction\Tract I Revised IRM WP Drawings\TRACT I IRM C-117 Final Surfacing Plan.dwg PLOT DATE: Tue, 06 Aug 2013 PLOT TIME: 11:34 AM



NOTES:

1. SEE SHEET G–002 FOR LEGEND ABBREVIATIONS AND GENERAL NOTES.
2. SEE SHEET G–003 AND G–004 FOR GENERAL PROJECT SPECIFICATIONS.

NOT FOR CONSTRUCTION

0 30 60 120
SCALE IN FEET

NO.	DATE	DR	CHK	APVD	REVISION
C	8/6/13	TDD	TDD	SCP	REVISED PER NYSEDEC COMMENTS ON TRACT I IRM WP
B	6/3/13			TDD	SCP 100% REMEDIAL DESIGN DRAWINGS
A	4/8/13			TDD	SCP DRAFT 100% REMEDIAL DESIGN DRAWINGS

DSGN TDD MAP BY APVD

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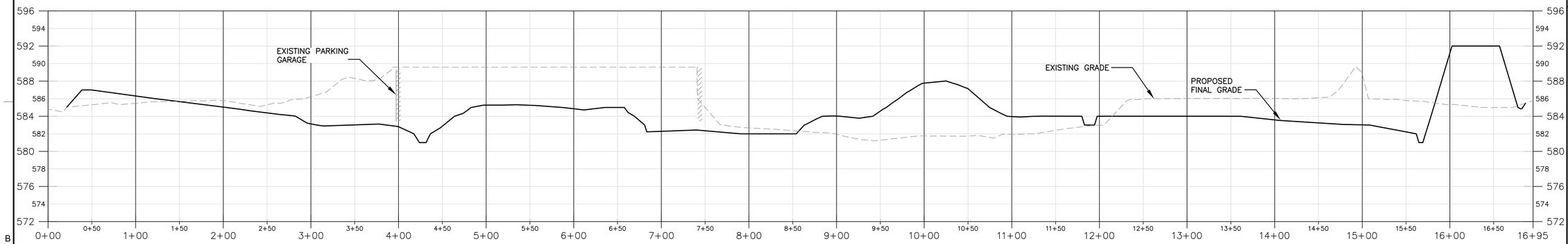
SITES C932157 AND 932136

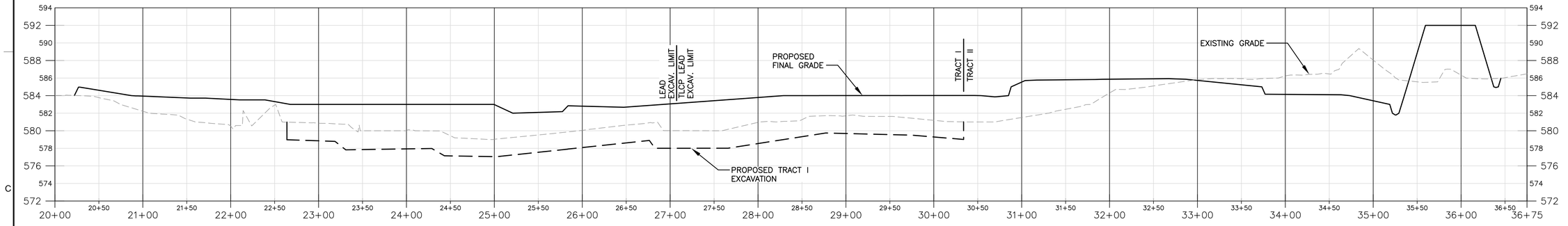
CROSS SECTION PLAN

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

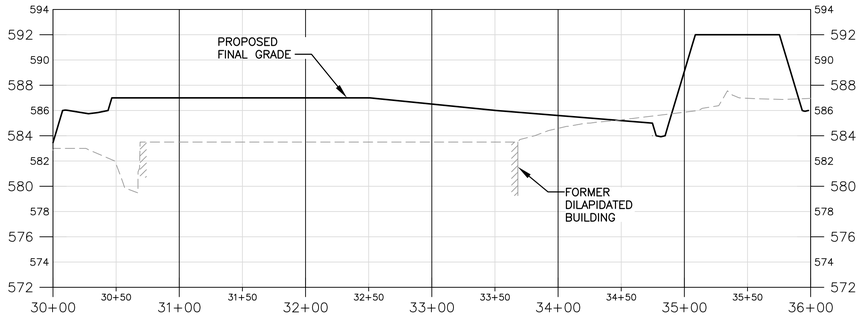
DATE	3/06/13
PROJ	3410-11-0832
DWG	C-118
SHEET	22 OF 28



SECTION A–A



SECTION B–B



SECTION C–C

NOTES:

1. SEE SHEET G–002 FOR LEGEND ABBREVIATIONS AND GENERAL NOTES.
2. SEE SHEET G–003 AND G–004 FOR GENERAL PROJECT SPECIFICATIONS.

NOT FOR CONSTRUCTION

HORIZONTAL SCALE: 1" = 60'
0 30 60 120
SCALE IN FEET

VERTICAL SCALE: 1" = 6'
0 3 6 12
SCALE IN FEET

NO.	DATE	DSGN	DR	CHK	APVD
C	8/6/13	REVISED PER NYSEDEC COMMENTS ON TRACT I IRM WP	TDD	SCP	SCP
B	6/3/13	100% REMEDIAL DESIGN DRAWINGS	TDD	SCP	SCP
A	4/8/13	DRAFT 100% REMEDIAL DESIGN DRAWINGS	TDD	SCP	SCP
NO.	DATE	REVISION	BY	APVD	

TDD TDD MAP SCP

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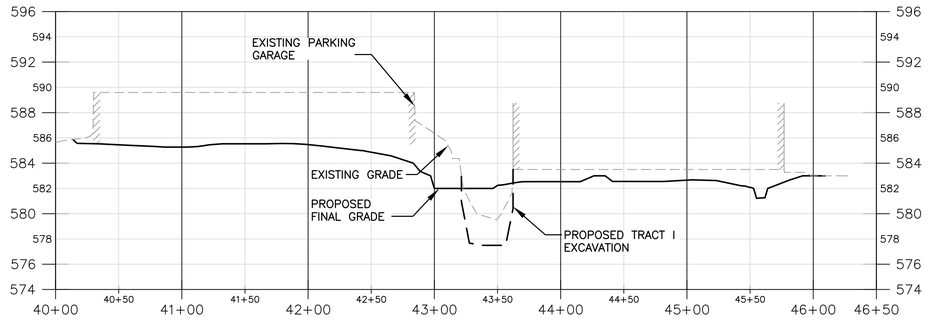
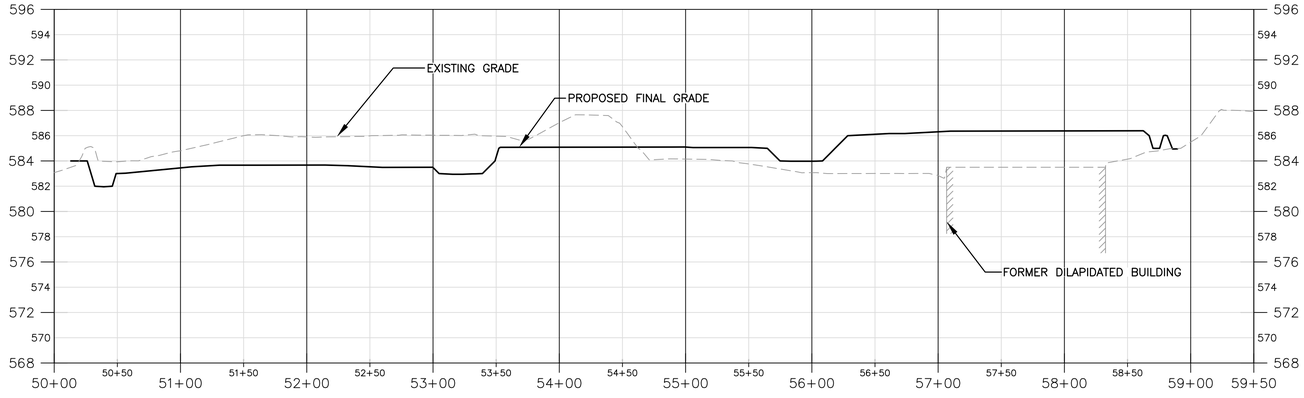
CROSS SECTIONS

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	3/06/13
PROJ	3410-11-0832
DWG	C-119
SHEET	23 OF 28



SECTION D–D



SECTION E–E

NOTES:

1. SEE SHEET G–002 FOR LEGEND ABBREVIATIONS AND GENERAL NOTES.
2. SEE SHEET G–003 AND G–004 FOR GENERAL PROJECT SPECIFICATIONS.

NOT FOR CONSTRUCTION

HORIZONTAL SCALE: 1" = 60'
0 30 60 120
SCALE IN FEET

VERTICAL SCALE: 1" = 6'
0 3 6 12
SCALE IN FEET

NO.	DATE	DSGN	DR	CHK	APVD
C	8/6/13	REVISED PER NYSEDEC COMMENTS ON TRACT I IRM WP	TDD	SCP	
B	6/3/13	100% REMEDIAL DESIGN DRAWINGS	TDD	SCP	
A	4/8/13	DRAFT 100% REMEDIAL DESIGN DRAWINGS	TDD	SCP	
		REVISION	BY	APVD	
		TDD	TDD	MAP	SCP

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CROSS SECTIONS

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	3/06/13
PROJ	3410-11-0832
DWG	C-120
SHEET	24 OF 28

FILE NAME: Z:\Projects\HONEYWELL\Niagara Falls\Issued for Construction\Tract I Revised IRM WP Drawings\TRACT I IRM C-120 Excavation Cross Sections.dwg PLOT DATE: Tue, 06 Aug 2013 PLOT TIME: 11:28 AM

GENERAL EROSION AND SEDIMENT CONTROL NOTES:

1. ALL WORK IS TO BE DONE IN ACCORDANCE WITH THE NEW YORK STATE STANDARDS AND SPECIFICATIONS FOR EROSION AND SEDIMENT CONTROL (STATE STANDARDS) AND THE CONTRACT DOCUMENTS. IF A DISCREPANCY EXISTS BETWEEN THE STATE STANDARDS AND THE CONTRACT DOCUMENTS, THE STATE STANDARDS SHALL TAKE PRECEDENCE.
2. ALL SOIL EROSION AND SEDIMENT CONTROL PRACTICES ARE TO BE INSTALLED PRIOR TO ANY MAJOR SOIL DISTURBANCE, OR IN THEIR PROPER SEQUENCE, AND MAINTAINED UNTIL PERMANENT PROTECTION IS ESTABLISHED.
3. EROSION AND SEDIMENTATION CONTROLS SHALL BE AUGMENTED OR SUPPLEMENTED IF THE INSTALLED MEASURES DO NOT PROVIDE ADEQUATE PROTECTION OF DOWNSTREAM RESOURCES AS DETERMINED BY THE ENGINEER OR DEPARTMENT.
4. ANY DISTURBED AREAS THAT WILL BE LEFT EXPOSED MORE THAN FOURTEEN (14) DAYS, AND NOT SUBJECT TO CONSTRUCTION TRAFFIC, WILL IMMEDIATELY RECEIVE A TEMPORARY SEEDING. IF THE SEASON PREVENTS THE ESTABLISHMENT OF TEMPORARY COVER, THE DISTURBED AREAS WILL BE MULCHED WITH HAY OR STRAW, OR EQUIVALENT MATERIAL, AT A RATE OF 2 TONS PER ACRE, ACCORDING TO STATE STANDARDS.
5. IMMEDIATELY FOLLOWING INITIAL DISTURBANCE OR ROUGH GRADING, ALL CRITICAL AREAS SUBJECT TO EROSION (I.E. STEEP SLOPES AND ROADWAY EMBANKMENTS) WILL RECEIVE TEMPORARY SEEDING IN COMBINATION WITH HAY OR STRAW MULCH OR A SUITABLE EQUIVALENT, AT A RATE OF 2 TONS PER ACRE, ACCORDING TO STATE STANDARDS.
6. ANY STEEP SLOPES (I.E. SLOPES GREATER THAN 3:1) WILL BE COMPLETELY GRADED AND STABILIZED DAILY, AS CONSTRUCTION PROGRESSES.
7. THE STANDARD FOR STABILIZED CONSTRUCTION ENTRANCE REQUIRES THE INSTALLATION OF A PAD OF CLEAN CRUSHED STONE AT POINTS WHERE TRAFFIC WILL BE ACCESSING THE CONSTRUCTION SITE.
8. ALL SOIL WASHED, DROPPED, SPILLED, OR TRACKED OUTSIDE THE LIMIT OF WORK OR ONTO PUBLIC RIGHT-OF-WAYS SHALL BE REMOVED IMMEDIATELY.
9. PERMANENT VEGETATION IS TO BE SEEDED OR SODDED ON ALL EXPOSED AREAS AS SOON AS POSSIBLE AFTER FINAL GRADING. IF SEEDING IS NOT PERFORMED WITHIN 48 HOURS OF COMPLETION OF FINAL GRADING, ADDITIONAL SURFACE SCARIFICATION SHALL BE COMPLETED PRIOR TO SEEDING.
10. AT THE TIME THAT SITE PREPARATION FOR PERMANENT VEGETATIVE STABILIZATION IS TO BE UNDERTAKEN, ANY SOIL THAT WILL NOT PROVIDE A SUITABLE ENVIRONMENT TO SUPPORT ADEQUATE VEGETATIVE GROWTH SHALL BE REMOVED OR TREATED IN SUCH A WAY THAT WILL PERMANENTLY ADJUST THE SOIL CONDITIONS AND RENDER IT SUITABLE TO SUSTAIN VEGETATIVE GROWTH. IF THE REMOVAL OR TREATMENT OF THE SOIL WILL NOT PROVIDE SUITABLE CONDITIONS, NON-VEGETATIVE MEANS OF PERMANENT STABILIZATION SHALL BE EMPLOYED.
11. UNFILTERED DEWATERING IS NOT PERMITTED. NECESSARY PRECAUTIONS MUST BE TAKEN DURING ALL DEWATERING OPERATIONS TO MINIMIZE SEDIMENT TRANSFER. ANY DEWATERING METHODS USED MUST BE IN ACCORDANCE WITH THE STANDARD FOR DEWATERING.
12. SHOULD THE CONTROL OF DUST AT THE SITE BE NECESSARY, THE SITE WILL BE SPRINKLED WITH WATER UNTIL THE SURFACE IS WET. TEMPORARY VEGETATIVE COVER SHALL BE ESTABLISHED OR MULCH SHALL BE APPLIED PER THE STATE STANDARDS. CALCIUM CHLORIDE SHALL ONLY BE USED FOR DUST CONTROL DURING FREEZING CONDITIONS.
13. STOCKPILE AND STAGING LOCATIONS ESTABLISHED IN THE FIELD SHALL BE PLACED WITHIN THE LIMIT OF WORK WITH APPROPRIATE PROTECTIVE EROSION AND SEDIMENTATION CONTROLS.
14. ALL SOIL STOCKPILES ARE TO BE TEMPORARILY STABILIZED IN ACCORDANCE WITH GENERAL EROSION AND SEDIMENT CONTROL NOTE NO. 4.
15. CONDUIT OUTLET PROTECTION MUST BE INSTALLED AT ALL REQUIRED OUTFALLS PRIOR TO THE DRAINAGE SYSTEM BECOMING OPERATIONAL.
16. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY EROSION OR SEDIMENTATION THAT MAY OCCUR DOWNGRADIENT OF STORMWATER OUTFALLS/OUTLETS OR OFFSITE AS A RESULT OF CONSTRUCTION OF THE PROJECT.

SOIL EROSION AND SEDIMENT CONTROL INSPECTION AND MAINTENANCE:

1. STABILIZED CONSTRUCTION ENTRANCE
   - A. STABILIZED CONSTRUCTION ENTRANCES SHALL, AT A MINIMUM, BE INSPECTED WEEKLY AND WITHIN 24 HOURS AFTER EVERY PRECIPITATION EVENT THAT PRODUCES 0.5 INCHES OF RAIN OR MORE DURING A 24-HOUR PERIOD.
   - B. STABILIZED CONSTRUCTION ENTRANCES SHALL BE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OF SEDIMENT ONTO PAVED SURFACES. CHECK FOR DAMAGE/DETERIORATION/CLOGGING AND IMMEDIATELY REPAIR OR RECONSTRUCT AS NECESSARY.
   - C. THE PERFORMANCE OF STABILIZED CONSTRUCTION ENTRANCES SHALL BE MAINTAINED BY LENGTHENING, SCRAPING, OR TOP-DRESSING WITH ADDITIONAL AGGREGATE.
   - D. STABILIZED CONSTRUCTION ENTRANCES SHALL HAVE A 6-INCH MINIMUM THICKNESS.
   - E. INSPECT ADJACENT IMPERVIOUS SURFACES DAILY (MINIMUM). IMMEDIATELY REMOVE VISIBLE ACCUMULATED SEDIMENT DEPOSITED ON PAVED SURFACES VIA SWEEPING, VACUUMING, OR WASHING. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH AGGREGATE, WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE. PROPERLY DISPOSE OF SEDIMENT.
2. SEDIMENT BARRIERS
   - A. SILTATION FENCE
     - A.1. SILTATION FENCES SHALL, AT A MINIMUM, BE INSPECTED WEEKLY AND WITHIN 24 HOURS AFTER EVERY PRECIPITATION EVENT THAT PRODUCES 0.5 INCHES OF RAIN OR MORE DURING A 24- HOUR PERIOD.
     - A.2. REMOVE THE SEDIMENT DEPOSITS OR INSTALL A SECONDARY BARRIER UPSLOPE FROM THE EXISTING BARRIER WHEN SEDIMENT DEPOSITS REACH ONE HALF THE HEIGHT OF THE FENCE. PROPERLY DISPOSE OF SEDIMENT.
     - A.3. REPLACE OR REPAIR FENCES WITHIN 24 HOURS OF OBSERVED FAILURE (E.G., DAMAGE OR DECOMPOSITION; FENCE MOVED OUT OF POSITION; UNDERCUTTING, OVERTOPPING, OR FLOW CHANNELS AROUND THE END OF FENCES).
     - A.4. MAINTAIN SILTATION FENCES UNTIL THE CONTRIBUTING AREA IS STABILIZED.

SOIL EROSION AND SEDIMENT CONTROL INSPECTION AND MAINTENANCE:

   - B. AUGMENTED SILTATION FENCE
     - B.1. AUGMENTED SILTATION FENCES SHALL, AT A MINIMUM, BE INSPECTED WEEKLY AND WITHIN 24 HOURS AFTER EVERY PRECIPITATION EVENT THAT PRODUCES 0.5 INCHES OF RAIN OR MORE DURING A 24-HOUR PERIOD.
     - B.2. REMOVE THE SEDIMENT DEPOSITS OR INSTALL A SECONDARY BARRIER UPSLOPE FROM THE EXISTING BARRIER WHEN SEDIMENT DEPOSITS REACH ONE HALF THE HEIGHT OF THE FENCE. PROPERLY DISPOSE OF SEDIMENT.
     - B.3. REPLACE OR REPAIR FENCES WITHIN 24 HOURS OF OBSERVED FAILURE (E.G., DAMAGE OR DECOMPOSITION; FENCE MOVED OUT OF POSITION; UNDERCUTTING, OVERTOPPING, OR FLOW CHANNELS AROUND THE END OF FENCES).
     - B.4. RESHAPE, ADD ADDITIONAL MATERIAL, OR REPLACE FILTER BERM WHEN DISTURBED BY CONSTRUCTION ACTIVITIES OR SIGNIFICANT STORM EVENTS.
     - B.5. MAINTAIN AUGMENTED SILTATION FENCES UNTIL THE CONTRIBUTING AREA IS STABILIZED.
1. PERIMETER DIKE/SWALE
   - A. PERIMETER DIKES/SWALES SHALL, AT A MINIMUM, BE INSPECTED WEEKLY AND WITHIN 24 HOURS AFTER EVERY PRECIPITATION EVENT THAT PRODUCES 0.5 INCHES OF RAIN OR MORE DURING A 24-HOUR PERIOD.
   - B. ACCUMULATED SEDIMENT SHALL BE REMOVED WHEN IT REACHES ONE HALF THE HEIGHT OF THE PERIMETER DIKE/SWALE. PROPERLY DISPOSE OF SEDIMENT.
   - C. REGRADE SWALE AND REPAIR DIKE AS REQUIRED TO CAPTURE CONSTRUCTION RUNOFF.
   - D. MAINTAIN PERIMETER DIKES/SWALES UNTIL THE AREA IS STABILIZED.
4. TEMPORARY SWALE
   - A. TEMPORARY SWALES SHALL, AT A MINIMUM, BE INSPECTED WEEKLY AND WITHIN 24 HOURS AFTER EVERY PRECIPITATION EVENT THAT PRODUCES 0.5 INCHES OF RAIN OR MORE DURING A 24-HOUR PERIOD.
   - B. ACCUMULATED SEDIMENT SHALL BE REMOVED WHEN IT REACHES ONE HALF THE HEIGHT OF THE TEMPORARY SWALE. PROPERLY DISPOSE OF SEDIMENT.
   - C. MAINTAIN TEMPORARY SWALES UNTIL THE AREA IS STABILIZED.
   - D. TEMPORARY CONVEYANCES SHOULD BE COMPLETELY REMOVED OR CONVERTED TO PERMANENT CONVEYANCES AS SOON AS THE SURROUNDING DRAINAGE AREA HAS BEEN STABILIZED OR AT THE COMPLETION OF CONSTRUCTION.
5. CHECK DAMS
   - A. CHECK DAMS SHALL, AT A MINIMUM, BE INSPECTED WEEKLY AND WITHIN 24 HOURS AFTER EVERY PRECIPITATION EVENT THAT PRODUCES 0.5 INCHES OF RAIN OR MORE DURING A 24 HOUR PERIOD.
   - B. REPLACE OR REPAIR CHECK DAMS WITHIN 24 HOURS OF OBSERVED FAILURE (E.G., MOVED STONE, ERODED SOIL AROUND OR UNDER THE CHECK DAM, TRAPPED SEDIMENTS OVERTOPPING CHECK DAM).
   - C. UNLESS INCORPORATED INTO A PERMANENT STORMWATER MANAGEMENT SYSTEM, CHECK DAMS SHALL BE REMOVED ONCE THE FINAL GRADING AND CHANNEL STABILIZATION IS APPLIED.
   - D. SEDIMENT DEPOSITS SHALL BE REMOVED WHEN DEPOSITS REACH HALF THE HEIGHT OF THE CHECK DAM. REMOVAL OF SEDIMENT MAY REQUIRE REPLACEMENT OF STONE. PROPERLY DISPOSE OF SEDIMENT.
6. ROCK OUTLET PROTECTION
   - A. ROCK OUTLET PROTECTION SHALL, AT A MINIMUM, BE INSPECTED WEEKLY AND WITHIN 24 HOURS AFTER EVERY PRECIPITATION EVENT THAT PRODUCES 0.5 INCHES OF RAIN OR MORE DURING A 24 HOUR PERIOD.
   - B. REPAIR ROCK OUTLET PROTECTION WITHIN 24 HOURS IF DISLODGED STONES; ERODED SOIL AROUND OR UNDER THE RIPRAP OR UNDERLYING FABRIC; OR TREE GROWTH IS OBSERVED.
7. SEDIMENTATION BASIN
   - A. SEDIMENTATION BASINS SHALL, AT A MINIMUM, BE INSPECTED WEEKLY AND WITHIN 24 HOURS AFTER EVERY PRECIPITATION EVENT THAT PRODUCES 0.5 INCHES OF RAIN OR MORE DURING A 24-HOUR PERIOD.
   - B. REMOVE SEDIMENT DEPOSITS WHEN SEDIMENT ACCUMULATION REACHES ONE HALF OF THE WET STORAGE CAPACITY OF THE BASIN OR WHEN THE DEPTH OF THE AVAILABLE POOL IS REDUCED TO 18 INCHES, WHICHEVER IS ACHIEVED FIRST.
   - C. IF THE OUTLET BECOMES CLOGGED, IT SHALL BE CLEANED TO RESTORE FLOW CAPACITY.
   - D. DISPOSE OF SEDIMENT WITHIN THE NEW SOLID WASTE BOUNDARY OR OFF-SITE IN ACCORDANCE WITH LOCAL, STATE, AND FEDERAL REGULATIONS.
8. TEMPORARY SEEDING AND MULCHING
   - A. AREAS RECEIVING TEMPORARY SEEDING AND MULCHING SHALL, AT A MINIMUM, BE INSPECTED WEEKLY AND WITHIN 24 HOURS AFTER EVERY PRECIPITATION EVENT THAT PRODUCES 0.5 INCHES OF RAIN OR MORE DURING A 24-HOUR PERIOD.
   - B. WHERE SEED/MULCH HAS MOVED OR SOIL EROSION HAS OCCURRED, REPAIR THE AREA APPROPRIATELY AND RE-APPLY SEED AND/OR MULCH. APPLY NETTING, TACKIFIER, OR OTHER ANCHORING TECHNIQUES AS NECESSARY TO PREVENT FAILURE. ADDITIONAL TEMPORARY MEASURES MAY ALSO BE INSTALLED TO CONTROL STORMWATER RUNOFF AND SEDIMENT MOVEMENT.
   - C. CONTINUE INSPECTION AND MAINTENANCE OF AREAS RECEIVING TEMPORARY SEEDING AND MULCHING UNTIL AT LEAST 90% OF THE SOIL SURFACE IS BE COVERED BY MATURE, ESTABLISHED VEGETATION CAPABLE OF CONTROLLING SOIL EROSION AND SURVIVING SEVERE WEATHER.
9. DUST CONTROL
   - A. AREAS THAT HAVE DUST CONTROL PRACTICES SHALL, AT A MINIMUM, BE INSPECTED DAILY.
   - B. REPEAT APPLICATION OF DUST CONTROL MEASURES WHEN FUGITIVE DUST BECOMES EVIDENT.

GENERAL CONSTRUCTION SEQUENCE – TRACT II:

1. INSTALL STABILIZED CONSTRUCTION ENTRANCE AND TEMPORARY FACILITIES AND CONTROLS.
2. INSTALL PERIMETER EROSION AND SEDIMENT CONTROLS INCLUDING SILTATION FENCE, AUGMENTED SILTATION FENCE, AND STONE CHECK DAMS.
3. REMOVE STOCKPILED MATERIALS AND OTHER SURFACE WASTE FOR OFF-SITE DISPOSAL.
4. COMPLETE DEMOLITION OF EXISTING DILAPIDATED STRUCTURE AND REMOVE MATERIALS FROM SITE AS NECESSARY AND IN ACCORDANCE WITH APPLICABLE REGULATIONS.
5. COMPLETE DEMOLITION OF UNDERGROUND PARKING DECK SLAB TO FACILITATE PLACEMENT OF MATERIAL FROM THE BORROW EXCAVATION AREA.
6. REMOVE AND STOCKPILE LEAD IMPACTED SURFACE SOILS WITHIN THE BORROW PIT AREA.
7. COMPLETE EXCAVATION IN BORROW PIT AND BACKFILL UNDERGROUND PARKING GARAGE.
8. ASSEMBLE PUG MILL PROCESS AREA AND ASSOCIATED CONTROLS NECESSARY TO COMPLETE SOIL STABILIZATION OF LEAD IMPACTED MATERIAL EXCEEDING ALLOWABLE TCLP CONCENTRATIONS.
9. SCREEN CONSTRUCTION DEBRIS FROM EXCAVATED SOIL FOR OFF-SITE DISPOSAL.
10. BEGIN PLACEMENT OF LEAD IMPACTED AND STABILIZED SOIL WITHIN THE BORROW PIT AREA.
11. CONTINUE PLACEMENT OF LEAD IMPACTED AND STABILIZED SOIL WITHIN BORROW PIT AREA.
12. EXCAVATE SHALLOW ISOLATED SOIL AREAS EXCEEDING SOIL CLEANUP OBJECTIVES FOR OFF-SITE DISPOSAL.
13. CONSTRUCT INFILTRATION SWALES AND ASSOCIATED UNDERDRAINS, STORM PIPING, AND STRUCTURES.
14. COMPLETE FINAL SUBGRADE SHAPING AND EXCAVATE PROPOSED CLEAN UTILITY CORRIDORS. EXCAVATED MATERIAL WILL BE CONSOLIDATE WITHIN THE SOIL COVER AREA OR DISPOSED OF OFF-SITE.
15. INSTALL DEMARCATION LAYER, BACKFILL UTILITY CORRIDORS, AND INSTALL CLEAN SOIL COVER SYSTEM.
16. SEED AND MULCH ALL AREAS IDENTIFIED FOR VEGETATIVE COVER. INSTALL GRAVEL COVER OVER REMAINING AREAS.
17. REMOVE TEMPORARY FACILITIES AND CONTROLS.
18. MAINTAIN VEGETATED AREAS IN ACCORDANCE WITH CONTRACT DOCUMENTS.

NOT FOR CONSTRUCTION

NO.	DATE	REVISION	DR	CHK	APVD
C	8/6/13	REVISED PER NYSEDEC COMMENTS ON TRACT I IRM WP	TDD	TDD	MAP
B	6/3/13	100% REMEDIAL DESIGN DRAWINGS	TDD	SCP	SCP
A	4/8/13	DRAFT 100% REMEDIAL DESIGN DRAWINGS	TDD	SCP	APVD
DSGN			TDD		

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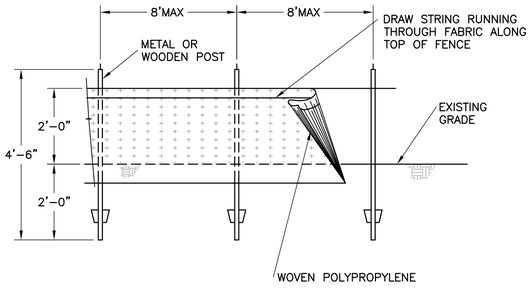
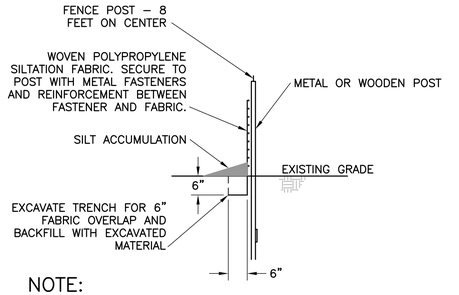
EROSION AND SEDIMENT CONTROL NOTES

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	3/06/13
PROJ	3410-11-0832
DWG	C-301
SHEET	25 OF 28

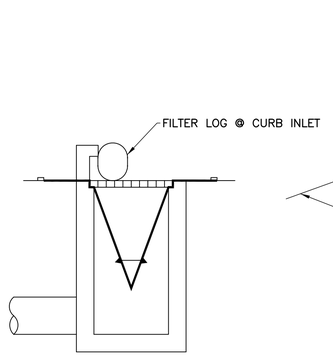




NOTE:

WHERE REQUIRED AT CRITICAL LOCATIONS, AUGMENTED SILTATION FENCE OR SILTATION FENCE REINFORCED WITH HOG OR CHICKEN WIRE OR INTEGRAL PLASTIC MESH REINFORCING MAY BE USED.

SILTATION FENCE A
NTS
TYP C–302



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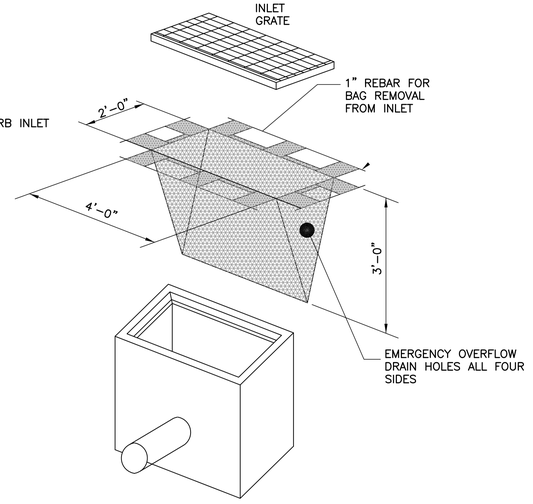
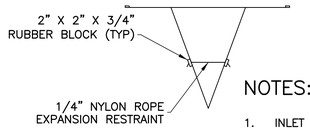


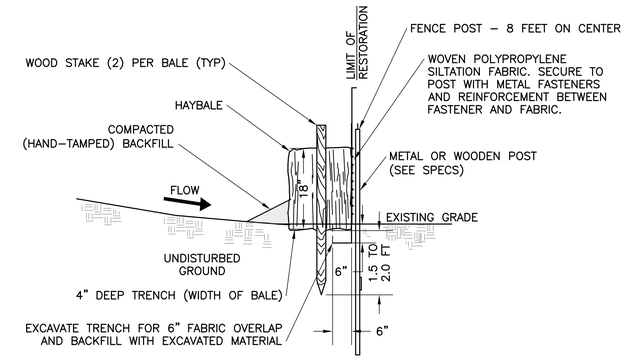
ISOMETRIC VIEW



NOTES:

1. INLET MUST SAFELY PASS FLOWS DEEPER THAN A 1–YR, 24–HR STORM EVENT.
2. CONTRACTOR IS TO INSPECT AND CLEAN INLET FILTERS AFTER EVERY STORM.
3. FILTERS ARE TO BE INSTALLED ON ALL CATCH BASINS WITHIN WORK AREA.
4. CONTRACTOR TO REMOVE FABRIC JUST PRIOR TO PAVING.

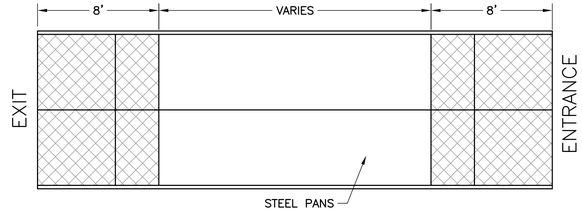
INLET PROTECTION B
NTS
TYP C–302

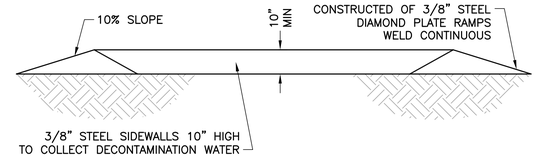


NOTE:

AT CRITICAL LOCATIONS, AUGMENTED SILTATION FENCE MAY BE USED.

AUGMENTED SILTATION FENCE C
NTS
TYP C–302

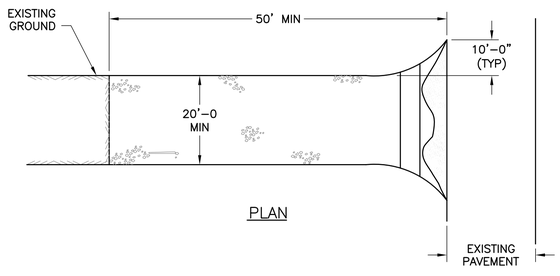




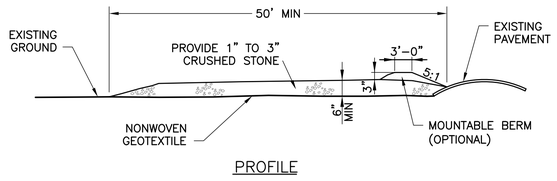
NOTE:

THE CONTRACTOR MAY PROVIDE AN ALTERNATE METHOD FOR VEHICLE/EQUIPMENT DECONTAMINATION UPON ACCEPTANCE OF THE ENGINEER, THE METHOD SHALL CONTAIN ALL DECONTAMINATION FLUIDS AND SOLIDS, AND PROVIDE A MEANS TO REMOVE ALL COLLECTED FLUIDS AND SOLIDS.

PORTABLE TRUCK DECONTAMINATION TRAYS F
NTS
TYP C–302

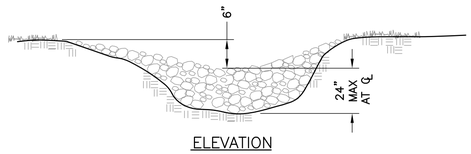


PLAN

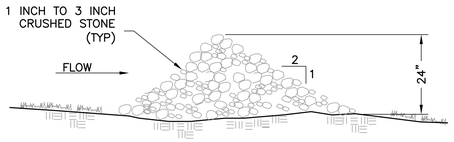


PROFILE

STABILIZED CONSTRUCTION ENTRANCE D
NTS
TYP C–302



ELEVATION



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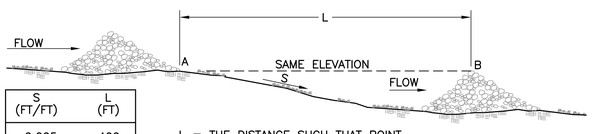


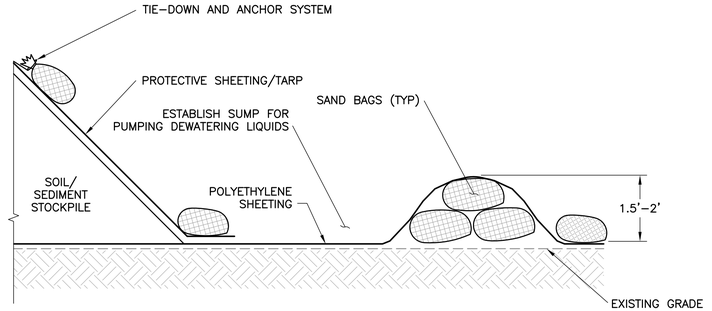
S (FT/FT)	L (FT)
0.005	400
0.010	200
0.020	100
0.030	66
0.040	50

L = THE DISTANCE SUCH THAT POINT A AND B ARE OF THE SAME ELEVATION.

S = SLOPE

PROFILE

TEMPORARY STONE CHECK DAM E
NTS
TYP C–302



STOCKPILE CONTAINMENT G
NOT TO SCALE
TYP C–302

NOT FOR CONSTRUCTION

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C	8/6/13	REVISED PER NYSEDEC COMMENTS ON TRACT I IRM WP	TDD	TDD	SCP
B	6/3/13	100% REMEDIAL DESIGN DRAWINGS	TDD	MAP	SCP
A	4/8/13	DRAFT 100% REMEDIAL DESIGN DRAWINGS	TDD	TDD	SCP
DSGN			TDD		BY

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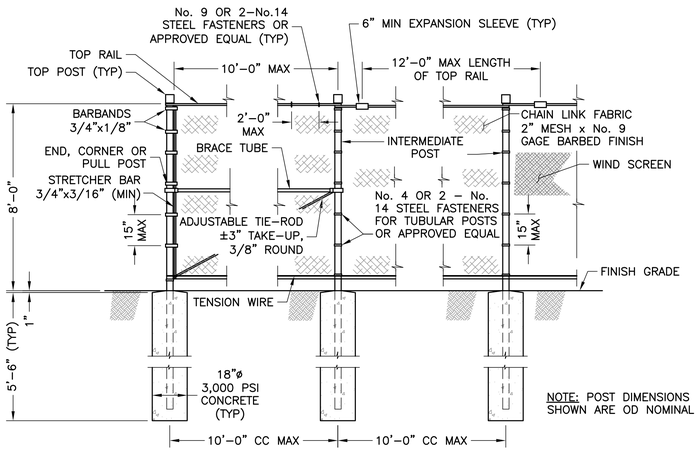
EROSION AND SEDIMENT CONTROL DETAILS

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	3/06/13
PROJ	3410-11-0832
DWG	C-302
SHEET	26 OF 28



NOTE: POST DIMENSIONS SHOWN ARE OD NOMINAL

DESCRIPTION

END, CORNER AND PULL POSTS:

ROUND 2.375"ø SCHEDULE 40 STEEL PIPE

INTERMEDIATE POSTS:

ROUND 1.90"ø SCHEDULE 40 STEEL PIPE

BRACE TUBES:

1.625" OD SCHEDULE 40 STEEL PIPE.

STRETCHER BARS:

LENGTH TO BE 1" LESS THAN FULL HEIGHT OF FABRIC. ONE STRETCHER BAR FOR EACH GATE AND END POST. TWO STRETCHER BARS FOR CORNERS AND BRACING.

TENSION WIRE:

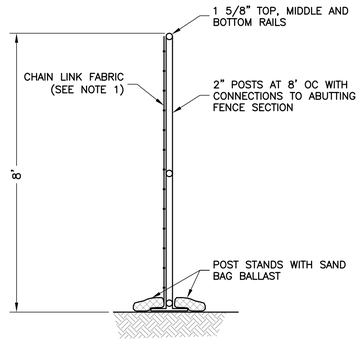
7 GA GALVANIZED COIL SPRING WIRE

TOP RAIL:

1.66"OD SCHEDULE 40 STEEL PIPE.

CHAIN LINK FENCE WITH WIND SCREEN

NTS — TYP C–303 (H)



NOTE:

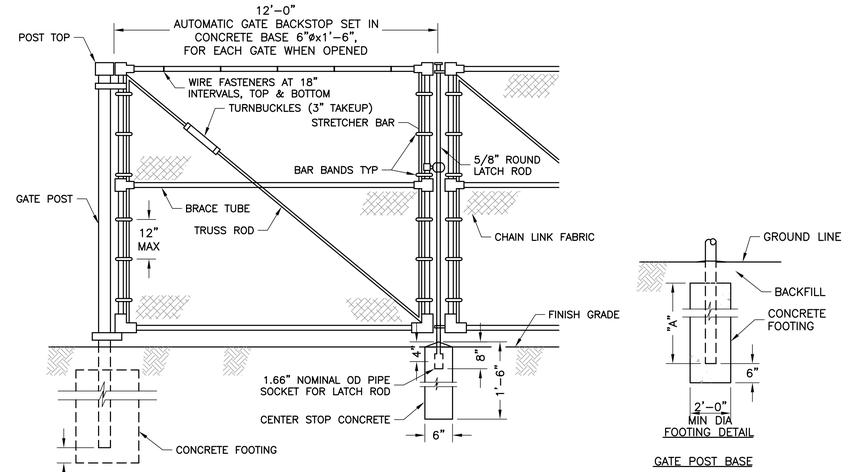
AT TEMPORARY FENCE LOCATIONS OUTSIDE THE LIMIT OF EXISTING PAVEMENT, POST MAY BE DRIVEN INTO THE GROUND.

TEMPORARY CONSTRUCTION FENCE

NTS — TYP C–303 (I)

WIND SCREENING NOTE:

ALL PROPOSED FENCING SHALL HAVE WIND SCREENING. WIND SCREEN SHALL BE 92% SLIT FILM POLYETHYLENE DARK GREEN SCREEN WITH BORDERS AND FASTENING GROMMETS ON 16" CENTER ON TOP AND 12" CENTERS ON BOTTOM. SCREEN SHALL BE MANUFACTURED IN THE U.S.A. BY TEX–NET INC., FLORENCE, NJ (609–499–9111) OR AN APPROVED EQUAL. SCREEN SHALL BE INSTALLED ON ALL FENCING. MOUNT CHAIN LINK FABRIC ON FENCE EXTERIOR WITH WIND SCREEN ON INTERIOR



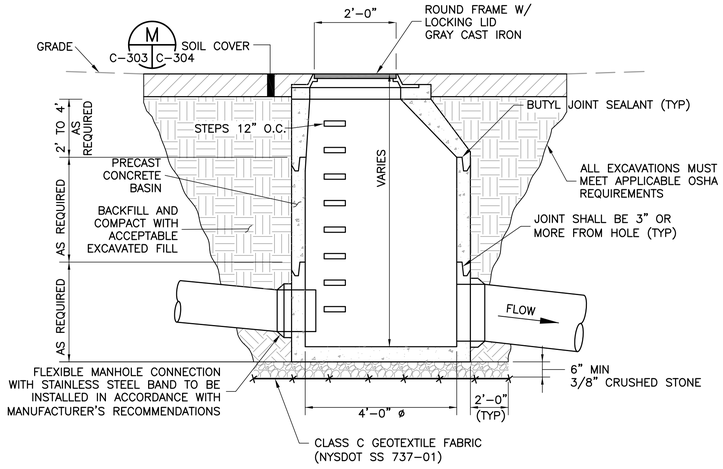
CHAIN LINK FENCE WITH DOUBLE GATE

NTS — TYP C–303 (J)

GATE POST BASE

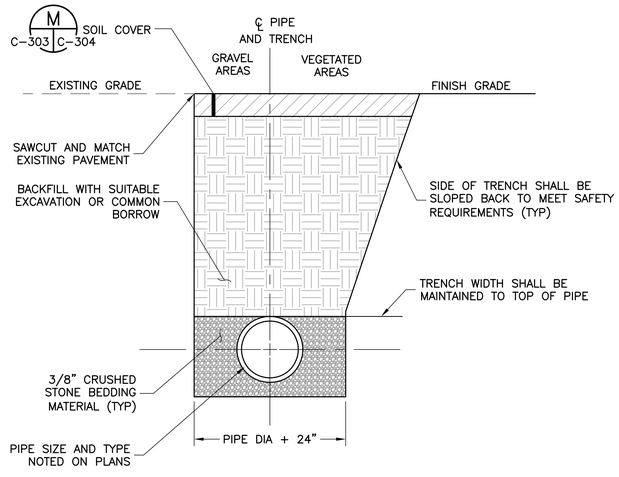
"A" = 6'–0" FOR ALL GATE POSTS

NOT FOR CONSTRUCTION



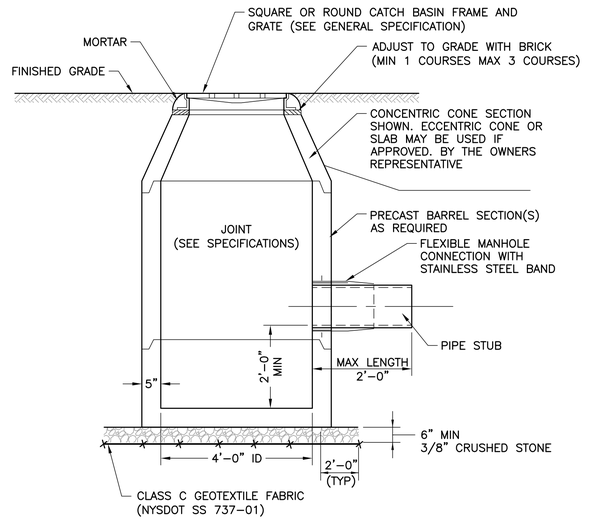
PRECAST CONCRETE MANHOLE

NTS — TYP C–303 (K)



PIPE TRENCH

NTS — TYP C–303 (L)



PRECAST CONCRETE CATCH BASIN

NTS — TYP C–303 (M)

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C	8/6/13	REVISED PER NYSEDEC COMMENTS ON TRACT I IRM WP	TDD	SCP	SCP
B	6/3/13	100% REMEDIAL DESIGN DRAWINGS	TDD	SCP	
A	4/8/13	DRAFT 100% REMEDIAL DESIGN DRAWINGS	TDD	SCP	
			BY	APVD	
			MAP	APVD	
			TDD	SCP	

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CIVIL DETAILS

VERIFY SCALE

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PROJ	3410-11-0832
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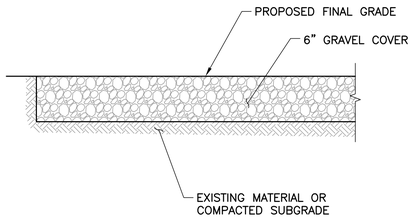
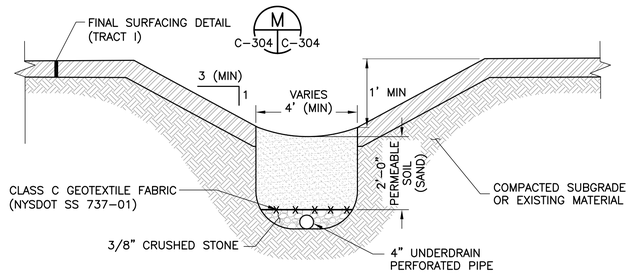
SHEET	27 OF 28



FINAL SURFACING DETAIL (TRACT I)

TRACT I NTS

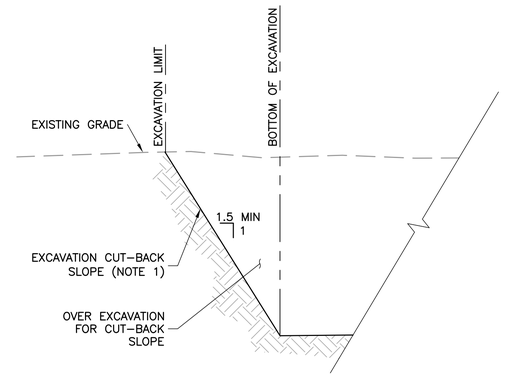
TYP C-304 M



TYPICAL INFILTRATION SWALE

NTS

TYP C-304 N



TYPICAL EXCAVATION SECTION

NTS

TYP C-304 O

NOTES:

1. CUT-BACK SLOPE SHALL MEET OSHA SAFETY REQUIREMENTS FOR TYPE OF SOIL AND GROUNDWATER CONDITIONS AS DETERMINED BY A COMPETENT EXCAVATION PROFESSIONAL.

NOT FOR CONSTRUCTION

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DWG	C-304
SHEET	28 OF 28

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