

WORKER PROTECTION PLAN

STUDY AREA 5
NJDEP SITE 117
FORMER RYERSON STEEL SITE

JERSEY CITY, NEW JERSEY

Prepared for

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1.0 PURPOSE AND SCOPE

This document presents a Worker Protection Plan (Plan) for the former Ryerson Steel Site (referred to by the NJDEP as Site No. 117), located in Jersey City, New Jersey, as required by the Site 117 Deed Notice. Remedial actions completed at the Site included installation of engineering controls (multi-layered capping system beneath surface pavement) and establishment of institutional controls (deed notice). Significant portions of the Site contain sub-surface hazardous chromium ore processing residue (COPR) historically used as fill material, and/or chromium-impacted soils or groundwater located beneath the cap materials.

It is essential that all existing and future engineering controls (e.g. capping systems) are not adversely affected by any subsurface intrusive work that may be performed so that they continue to be protective of human health and the environment. Institutional controls (e.g., deed notices and groundwater Classification Exception Areas) are in place to communicate the presence of engineering controls and chromium-impacted soils and groundwater. Deed notice documents contain specific requirements pertaining to notification, disturbance and repair of engineering controls. Deed notices are included for reference as Appendix D.

This Plan was prepared by Wood Environment & Infrastructure Solutions, Inc. (formerly Amec Foster Wheeler) on behalf of Honeywell for use by the Site owner and/or operators and their contractors for the protection of the site engineering controls and the workers who may be potentially exposed to COPR, chromium-impacted soils or groundwater in conjunction with any ground intrusive work performed at the site. This Plan identifies health and safety requirements for the protection of site workers and contractors who may perform ground intrusive activities (e.g., digging, drilling, excavation) that may disturb existing engineering controls, provides a basis for worker awareness to inform workers of potential hazards associated with chromium-impacted media, and addresses coordination of work with Honeywell.

Honeywell has also entered into a contract with Terradex Inc. to notify Honeywell through the New Jersey One Call system whenever soil disturbing work takes place at the Site. Notice through the Terradex LandWatch system will enable Honeywell to work with entities doing subsurface work and inform them of the processes

described in this Worker Protection Plan. Honeywell will continue to use the Terradex LandWatch system to receive notification of any subsurface activities on the Site, provided Terradex is willing and able to provide this service in a cost effective manner, and provided Terradex is able to provide this service consistent with the requirements of New Jersey law.

This Plan is organized into the following sections:

Section 1 – Purpose and Scope: identifies the purpose and scope of the Plan.

Section 2 – Site Background: presents background information including previous investigations, remedial actions, engineering and institutional controls.

Section 3– Coordination of Work: addresses coordination of work between the Site owner/operators and Honeywell, including oversight; handling, removal and disposal of chromium-impacted materials; and restoration of the engineering controls in connection with any ground intrusive activities that could cause contact with chromium-impacted media.

Section 4 – Hazard Evaluation: provides general information on potential health hazards associated with chromium.

Section 5 – Health and Safety Requirements: identifies applicable health and safety requirements for workers.

2.0 SITE BACKGROUND

This section provides background information for Site 117 Former Ryerson Steel. Site 117 is part of Study Area 5 which includes five sites located on the east side of Route 440 in Jersey City.

The Site is located along Route 440 on the west side of the City of Jersey City. Site figures are provided in **Appendix A**. The Site property is designated as Block 26101, Lots 1.01 and 1.02 (formerly Block 1285.5, Lot 1). The majority of the Site property (Lot 1.01) is owned by Jersey City Fields, LLC, and is occupied by commercial retail facilities including The Home Depot and Raymour & Flanigan Furniture (referred to herein as “the main Site”). A small portion of the Site property (Lot 1.02) is owned by Bayfront Redevelopment, LLC, a Honeywell affiliate, and serves as the location of a groundwater treatment filter station structure for the remedial actions completed on adjacent Sites 90/184 (Baldwin Steel/M.I. Holdings; New Jersey City University [NJCU] property). This small lot is also referred to as the wedge parcel and includes easements for an access road to the retail facility and for future ingress/egress and utilities associated with the NJCU redevelopment project.

The current use of the main Site as a commercial/retail facility and of the wedge parcel as a groundwater treatment station facility and access road is expected to continue for the foreseeable future. The Site property encompasses approximately 15 acres and is bounded on the north by Site 090 (former Baldwin Steel; currently occupied by New Jersey City University), on the east by commercial and municipal properties, on the south by a commercial facility, and on the west by Site 153 (Former Morris Canal) and Route 440.

The Site was the location of the former Mutual Chemical Company sodium dichromate production facility from approximately 1905 to 1954, and then was used for steel production by Ryerson Steel. The buildings related to former chemical and steel production were demolished. The entire Site was capped in accordance with an NJDEP-approved Remedial Action Work Plan (RAWP) as part of the Site redevelopment as a retail facility. Remedial actions were documented in a Remedial Action Report (RAR) dated February 1998, prepared by Enviro-Sciences, Inc.

Remedial Actions and Engineering Controls

Remedial actions were completed in 1997 and included excavation and offsite transportation and disposal of contaminated soils and installation of engineering controls (cap) over remaining contaminated soils. Engineering controls consist of a multi-layered cap system with geomembrane liner situated beneath existing pavement and landscaped areas. The capping system consists of the following components (from bottom to ground surface): geotextile protection fabric; 40-mil linear low density polyethylene (LLDPE) impervious geomembrane; geocomposite drainage material; and minimum 6 to 12 inches of clean fill material. Site surface features include asphalt or concrete over the majority of the site with some small landscaped areas. Information regarding the cap area and engineering controls are indicated on figures in **Appendix A**.

The reference figures in **Appendix A** include the membrane grading plan and cross-sections which may be used to estimate the depth of clean fill above the liner and information on liner placement in the area of structures and utilities. Information regarding the cap materials, liner specifications, and QA/QC information from the RAR is included for reference in **Appendix C**. Site maps indicating soil contaminant concentrations are included as Exhibit B to the Deed Notice attached in **Appendix D**.

Institutional Controls

Following completion of remedial actions, a deed notice was recorded for the Site on March 24, 1998. Following subdivision of the property into two separate parcels including the main Site (Lot 1.01) and small wedge parcel (Lot 1.02), the original deed notice was terminated and separate deed notices were recorded for the two parcels in 2015. As previously discussed, the subdivided wedge parcel serves as the location of a groundwater treatment filter station structure for the remedial actions completed on adjacent Sites 90/184 (NJCU property). The deed notices reflect current block and lot information and the NJDEP model deed notice format specified in the NJDEP Administrative Requirements for the Remediation of Contaminated Sites issued in May 2012.

Post-remediation cap inspections are conducted by Honeywell on a quarterly basis and protectiveness certification reports are submitted to the NJDEP every two years. The purpose of the deed notices is to communicate the presence of contaminated soils and prevent unauthorized disturbance of engineering controls. The deed notice specifies requirements for notification to the NJDEP and to

Honeywell prior to any alteration, improvement, and/or disturbance of engineering controls, as well as monitoring and reporting requirements. Refer to the deed notices for details regarding monitoring, maintenance, notification and reporting requirements. Copies of the deed notices for the main site and subdivided wedge property are included in Appendices D-1 and D-2, respectively.

An institutional control for groundwater in the form of a Classification Exception Area (CEA) was established by the NJDEP for Study Area 5 (which includes Site 117 and other sites) and Study Areas 6 and 7 (located on the west side of Route 440) to address chromium in groundwater above the NJDEP groundwater quality standards. A CEA is required where residual groundwater contaminants may remain at concentrations above the NJDEP groundwater quality standards to communicate the presence of, and prevent the use of contaminated groundwater.

Remedial Action Permits

The NJDEP issued Remedial Action Soil Permits for the main site (Lot 1.01) and the wedge parcel (Lot 1.02) on December 27, 2017. The permits specify long term requirements for maintenance, monitoring, and reporting regarding the effectiveness of the engineering and institutional controls.

Subsurface Work Authorization Form/Digging and Excavation Permits

Completion of a Subsurface Work Authorization Form/Digging and Excavation Permit (“Dig Permit Form”) checklist is required prior to any subsurface work that may disturb the engineering controls (cap). The Dig Permit Form is intended to facilitate coordination of work by the Site owner and/or operator with Honeywell prior to conducting utility work or any other subsurface work that may potentially disturb the engineering controls. The Dig Permit Form is provided in **Appendix E**.

3.0 COORDINATION OF WORK

Prior to performing subsurface work at the Site, any entity conducting such work, including the Site owner (Jersey City Fields, LLC), operators/tenants and/or their contractors, must notify Honeywell and provide information regarding the work location and nature of disturbance (i.e., area and depth of disturbance, timing of work). This information will enable coordination of work, establishing requirements for worker protection, handling and disposal of chromium-impacted media, and repair and restoration of engineering controls. Deed notice requirements also specify notification to Honeywell and the NJDEP prior to any activities that will involve the disturbance of engineering controls.

A Subsurface Work Authorization Form (“Dig Permit”) has been developed to facilitate coordination of work (**Appendix E**). Use of the dig permit is required for all planned subsurface work at the Site.

Honeywell has also established a telephone notification and response system for use by any entity conducting subsurface work, to notify Honeywell of any work activities planned or required on an emergency basis that may disturb the engineering controls. The notification and response system facilitates coordination of activities between Honeywell and other parties with respect to handling and disposal of chromium-contaminated media that may be generated during work.

The notification system includes a telephone answering service (referred to as the Chromium Response Hotline: **855-727-2658**); this number is also included in Deed Notice documents for providing notification to Honeywell prior to disturbance of engineering controls.

All parties including Site owner/operators/tenants or their contractors who plan to perform any ground intrusive work above the engineering controls must notify and consult with Honeywell in order to (1) determine what level of worker protection is appropriate, (2) determine if proposed work activities comply with or are applicable to the deed notice requirements, and (3) to coordinate on-site oversight by Honeywell or its representative of any ground intrusive work above the engineering controls.

This Worker Protection Plan must be used by Site owner/operators/tenants to protect their employees or contractors. Trained personnel must perform ground

intrusive work based on the requirements indicated in Section 5 and summarized on **Table 1**.

Honeywell or its representative must be on-site to observe ground intrusive work that may impact the engineering controls and will provide technical assistance and field support as needed, i.e., to document that the engineering controls are not disturbed and that appropriate precautions and safety measures are taken in the event that the engineering controls are disturbed.

Honeywell, on an annual basis, will provide written communication to Jersey City Fields, LLC regarding the following:

- Request that Jersey Fields, LLC communicate with Site operators/tenants regarding the requirements of the Deed Notice and Worker Protection Plan; and
- Honeywell availability to provide briefing or training to Site operators and/or tenants regarding awareness of the chromium remedy and the requirements of the Deed Notice, Worker Protection Plan.

The above communication will be in the form of electronic mail correspondence or letter to be done annually by January 31.

3.1 COORDINATION OF WORK BETWEEN HONEYWELL AND SITE OWNER AND/OR OPERATOR/TENANT

The following steps summarize procedures for coordination of work between Honeywell and the Site owner and/or operator/tenant for performing subsurface work at the Site.

1. Site owner/operator/tenant identifies work project involving intrusive activities above the engineering controls (cap materials).
2. Site owner/operator/tenant notifies Honeywell of the planned work location and depth and the estimated schedule/timing for completion of work, and initiates completion of Dig Permit.
3. Honeywell (or its designated contractor) reviews the scope of work and makes a determination, in consultation with the Site owner/operator/tenant, regarding requirements pertaining to deed notice disturbance, health and

safety requirements including the need for 40-hour HAZWOPER trained workers, and any necessary repair/restoration of engineering controls. If the work is confirmed to involve disturbance of engineering controls and potential exposure to chromium contaminated media, then Honeywell coordinates with the Site owner/operator/tenant and the contractor performing the work regarding on-site observation of the work by Honeywell or its representative. Honeywell will provide technical assistance and field support (to be determined in consultation with Site owner/operator/tenant). If Honeywell determines that the proposed work will not disturb engineering controls, then the Site owner/operator/tenant would proceed with work without further coordination with Honeywell. In such cases, Honeywell may elect to have its representative on-site to observe work and document there is no disturbance of the engineering controls (to be determined on a case by case basis).

4. If applicable, Honeywell or other appropriate party provides notification to the NJDEP, as required in accordance with deed notice requirements for disturbance of engineering controls (refer to the deed notice for notification requirements).
 5. Honeywell (or its designated contractor) coordinates with the Site owner/operator/tenant and the contractor performing work as needed for performance of field work including the use of qualified contractors for excavation, handling and disposal of chromium-contaminated materials at a facility licensed to accept such materials, backfilling, and site restoration including repair/replacement of engineering controls. Honeywell (or its designated contractor) will provide technical assistance and field support as needed, to be determined in consultation with the Site owner/operator/tenant.
- Following completion of work, Honeywell or other applicable party prepares and submits a deed notice disturbance report with documentation of field work and restoration of engineering controls to the NJDEP (with copies provided to the Site owner/operator) for inclusion with the next biennial certification report in accordance with deed notice requirements, as applicable for disturbance of engineering controls.

3.2 COORDINATION OF WORK BETWEEN HONEYWELL AND OTHER PARTIES

This Worker Protection Plan applies to all subsurface work at the Site and may also be used by other parties who may perform subsurface work at the Site. Other parties may include, but are not limited to, JCMUA, PSE&G, Comcast, Verizon, NJDOT, other utilities and/or their contractors. Honeywell will undertake reasonable efforts to work with other parties to make them aware of this Worker Protection Plan and to urge them to use it to protect their workers. In most cases, this effort will consist of Honeywell's contractor reviewing key sections of this document with the crew in the field, prior to the crew starting any work. Honeywell may receive notification of work by other parties through the Chromium Response Hotline or the Terradex LandWatch system.

The following steps summarize procedures for coordination of work between Honeywell and other parties and/or their contractors for performing subsurface work in the area of Site:

1. Other party notifies Honeywell regarding work project (e.g., utility repair) by contacting the Chromium Response Hotline: **855-727-2658** or Honeywell is notified of work through the Terradex LandWatch system.
2. For notification of work through the Terradex LandWatch system, Honeywell will initiate telephone contact with third party contractors and follow-up with electronic mail notification within 24 hours. Honeywell will send electronic mail notification (A) below, advising the contractor of the nature of the chromium remedial measures (e.g., engineering controls) and the need for approval from Honeywell before proceeding with the soil disturbance (the electronic mail communication will include a copy of the annual utility notification letter); or if Honeywell is able to determine that the proposed work will not impact the remedial measures, Honeywell will send electronic mail notification (B) below, advising that no further review by Honeywell is needed. Text for email notification to third parties:

(A) **"NOTICE:** Confirming our telephone conversation and based on the information provided, you have proposed actions that may disturb a contaminated site subject to a state court order and regulated by NJDEP. We request an on-site meeting with a representative of your firm to review the specific scope and location of the proposed work prior to disturbance."

or

(B) “**NOTICE:** Confirming our telephone conversation and based upon the information provided, the planned intrusive work is outside of the areas of known chromium-impacted soils. We do not require any additional coordination with Honeywell for this scope.”

3. For emergency situations where subsurface work needs to be done within a short timeframe before a determination can be made on whether or not the work is in an area of chromium soils, the other party may proceed with work using properly trained contractors (i.e., OSHA 40-hour HAZWOPER training) and Honeywell will provide technical assistance and field support (to be determined in cooperation with the party). For non-emergency situations, Honeywell determines whether or not the proposed work location is within an area of chromium soils and provides confirmation to the party as described above. Honeywell, in consultation with the party performing work, completes the Dig Permit (**Appendix E**). If the work location is confirmed to be in an area of chromium soils, then Honeywell coordinates with the party regarding response and field work activities. If Honeywell determines that the proposed work is not in an area of chromium soils, then the party would proceed with work without further coordination with Honeywell.
4. Honeywell or the other party provides notification to the NJDEP, as required in accordance with Deed Notice requirements for disturbance of engineering controls (refer to the Deed Notice for notification requirements).
5. Honeywell coordinates with the party as needed for performance of field work including the use of qualified contractors for excavation of chromium-contaminated materials and disposal at a facility licensed to accept such materials, backfilling, and site restoration including repair/replacement of the engineering controls. Work coordination will also include arrangements as needed between the parties to observe or inspect cap repairs and site restoration work. Honeywell will observe any planned disturbance and restoration of the engineering controls. Honeywell (or its designated contractor) will provide technical assistance and field support as needed for documentation and reporting requirements and make arrangements for disposal of chromium contaminated materials.
6. Honeywell or other applicable party prepares and submits a deed notice disturbance report with documentation of field work and restoration of engineering controls to the NJDEP (with copies provided to the Site

owner/operator) for inclusion with the next biennial certification report in accordance with deed notice requirements, as applicable for disturbance of engineering controls.

4.0 HAZARD EVALUATION

This section provides information on chromium including health and safety information and general assessment of potential hazards and health and safety concerns for work on sites where COPR fill or chromium-impacted media such as soils or groundwater are present.

Chromium ore processing residue (COPR) is a by-product of the extraction process of chromium from its ore, which involves the roasting of chromite ore under highly alkaline conditions. COPR contains both hexavalent and trivalent chromium in a complex mineral matrix and may be caustic, i.e., highly alkaline with pH values typically greater than 11. COPR is typically a grayish-black colored granular material and may also be indicated by the presence of yellow to green colored grains or nodules, or hard layers of reddish brown material.

Potential chemical hazards associated with disturbance of remedial measures and engineering controls at the Site may include the presence of chromium and hexavalent chromium in fill soils and groundwater. Chromium-impacted soil (also referred to as “chromium soils”) refers to soils containing hexavalent chromium above the NJDEP soil criteria, currently 20 milligrams per kilogram (mg/kg or parts per million [ppm]). Chromium-impacted groundwater refers to groundwater containing chromium above the NJDEP groundwater quality standards, currently 70 micrograms per liter (µg/L or parts per billion [ppb] based on total chromium).

Potential chemical exposure pathways include:

- Inhalation of airborne dusts and mists that may contain contaminated particulates
- Skin and eye contact and absorption due to direct contact with contaminated soil sediment, and/or liquids
- Incidental ingestion of contaminated soils, liquids, and/or particulates

Contact with known or suspected COPR-contaminated media must be avoided. Potential exposure to chromium contamination could occur by construction or utility workers performing ground intrusive activities (e.g., drilling, digging, excavation)

that would penetrate the cap materials. Only properly trained and equipped personnel should be allowed to perform tasks that may involve the disturbance of cap materials and handling of known or suspected contaminated media (i.e., OSHA 40-hour HAZWOPER training). Worker protection requirements are included in Section 5.

In the event of any inadvertent disturbance to the engineering controls, workers are advised to stop work, cover and secure the area using appropriate measures (e.g., plastic sheeting, traffic cones or barrier) and notify appropriate site management personnel (Jersey City Fields, LLC, facility operator, or other applicable party) and Honeywell. On-going work would then be coordinated with Honeywell with respect to the management of chromium-contaminated materials and repair/restoration of the Chromium Remedy (see Section 3 for coordination of work).

NOTE: The capping system at Site 117 includes a black colored geomembrane liner above chromium contaminated soils and minimum 6 to 12 inches of clean fill material above the liner. If the geomembrane liner is inadvertently encountered or disturbed, workers must stop work and notify their supervisor (also see Section 5).

The following fact sheets with information on chromium, potential health hazards, and precautions to prevent exposure are provided in **Appendix B**:

- Agency for Toxic Substance and Disease Registry (ATSDR) Fact Sheet on Chromium
- Occupational Safety and Health Administration (OSHA) Fact Sheet on Health Effects of Hexavalent Chromium
- New Jersey Department of Health and Senior Services (DHSS) Right to Know Hazardous Substance Fact Sheet

Additional information and studies regarding the potential health hazards of hexavalent chromium can be found at the Integrated Risk Information System (IRIS) U.S. Environmental Protection Agency, Chemical Assessment Summary National Center for Environmental Assessment, Chromium (VI) (available at https://cfpub.epa.gov/ncea/iris/iris_documents/documents/subst/0144_summary.pdf).

Other contaminants that may be associated with regional historic fill or other sources of contamination include polycyclic aromatic hydrocarbons (PAHs) and metals (e.g., arsenic, lead) unrelated to COPR fill. These other potential contaminants are not addressed in this Plan.

5.0 HEALTH AND SAFETY REQUIREMENTS

This section presents health and safety requirements and programs for site workers and contractors who may be potentially exposed to hazardous substances including hexavalent chromium. These programs include worker training, medical monitoring, respiratory protection, and hazard communication. Applicable regulations include Hazardous Waste Operations and Emergency Response (HAZWOPER) requirements at 29 Code of Federal Regulations (CFR) Section 1926.65 and the Hexavalent Chromium Standard (29 CFR 1926.1126; Construction Industry Standard). A summary of worker training requirements for hazardous waste sites and hexavalent chromium is presented on **Table 1**.

The training requirements in this section apply to workers who could be exposed to chromium-contaminated materials and are to be addressed by the employer of the person performing the work. The worker training requirements in this section are applicable to subsurface work involving the disturbance or penetration of engineering controls (e.g., cap materials) and potential for exposure to contaminants. These requirements would not apply to work that does not involve potential exposure to contaminants, such as non-intrusive work or other limited near-surface work activities within clean fill that do not involve potential disturbance of the geomembrane liner and contact with contaminants. Note that the remedial actions included placement of clean fill (minimum 6 inches and typically 12 inches thick) above geomembrane liner prior to installation of surface cover features (asphalt or concrete). The engineering controls are described in Section 2 and are shown on figures in **Appendix A**.

Prior to work involving disturbance of engineering controls and potential exposure to contaminated soils, Honeywell must be notified as indicated in Section 3 to confirm requirements and coordinate removal and/or disposal of chromium soils. It is expected that worker protection requirements under this section would be incorporated into a Health and Safety Plan (HASP), to be prepared and implemented by the entity and/or their contractors performing the work under OSHA HAZWOPER requirements.

Site owner/operator personnel (e.g., Jersey City Fields, Home Depot, Raymour & Flanigan or other tenants) are not expected to conduct ground intrusive activities

(e.g., excavation, digging, drilling) that would involve disturbance of engineering controls and potential for exposure to chromium soils. It is expected that such activities (if required) would be implemented by contractors for the Site owner/operators/tenants who are knowledgeable about potential hazards and procedures to be followed when work is conducted in areas of engineering controls. Therefore, Site owner/operators/tenants or other applicable party responsible for conducting ground intrusive subsurface work are obligated to confirm that their personnel and contractors have appropriate training.

The following sections include, but are not necessarily limited to, current OSHA requirements expected to be applicable to work involving disturbance of engineering controls and potential for exposure to chromium-contaminated soils or groundwater. All parties conducting such work are responsible for complying with current OSHA requirements.

Personnel Training

- OSHA HAZWOPER training is required for field personnel whose job responsibilities cause them to be exposed or have the potential to be exposed to hazardous substances/wastes, in this case, hexavalent chromium. This applies to work involving disturbance of engineering controls at the subject site or work within the exclusion zone or regulated area for field work as defined in the site-specific Health and Safety Plan (HASP).
- Management and Supervisory Training is required for individuals who manage or supervise personnel engaged in hazardous waste operations.
- Training documentation is required to be maintained by the party conducting the field work. Field work supervisory personnel (i.e., health and safety officer) are responsible for checking training documentation to verify that workers have complete and current documentation.

Determination regarding use of OSHA HAZWOPER 40-hour trained workers will be made on project specific basis based on the nature of field work. It is expected that, in most cases, 40-hour trained workers will be required for any work that will involve disturbance of the geomembrane liner, and that 40-hour trained workers will not be required for work only anticipated to disturb clean soils above the liner. Refer to the site maps in Appendix A for details regarding engineering controls.

NOTE: If the geomembrane liner materials described above are encountered by workers who are not properly trained according to the requirements of this section, then stop work and notify supervisory personnel, who will then notify appropriate owner/operator management personnel and Honeywell.

Preparation of Site Health and Safety Plan

- Potential exposure to contaminants in the soil or groundwater would be addressed as part of a site-specific HASP, which would be prepared and implemented by contractors performing field work under OSHA HAZWOPER requirements.

Medical Monitoring

- Under the OSHA HAZWOPER standard, medical monitoring is required for workers performing field work onsite for more than 30 days per year and exposed to hazardous substances including hexavalent chromium above applicable exposure limits. Medical monitoring requirements would apply to most work situations involving disturbance of engineering controls and potential for exposure to chromium-contaminated soils, to be determined on a case by case basis by the entity performing field work. If required, medical monitoring is provided by the employer of the person performing field work.

Hazard Communication

- OSHA hazard communication requirements govern “hazardous substances” and exclude “hazardous waste.” For hazardous waste site work, the OSHA Hazard Communication standard only applies to hazardous chemicals brought to the site (e.g., decontamination fluids), not to the contaminants in the soil or groundwater.
- The hazard communication program is required to be part of the Health and Safety Policy and Procedures Manual and be made available to employees for review. Hazard communication guidelines for compliance can be found at the following OSHA website:
<http://www.osha.gov/dsg/hazcom/oshacomplianceassistance.html>.
- Containers of hazardous substances are required to be labeled as to the contents, appropriate hazard warning, and the name and address of the manufacturer. The name on the label must match the name on Material

Safety Data Sheets/Globally Harmonized System. Material Safety Data Sheets are obtained from the manufacturer when hazardous substances are purchased to conduct field work, and maintained at the work site for all hazardous substances to be used.

In addition to the above requirements to address work involving potential exposure to hexavalent chromium, there may be other applicable OSHA training requirements for contractors performing field work. Compliance with such requirements, as for example those pertaining to excavation activities under OSHA 29 CFR 1926.650, is the result of the type of activity undertaken rather than the presence of chromium, thus the Site owner/operator/tenants and their respective contractors must independently evaluate the need to comply with such requirements. All parties conducting work must check applicability and comply with current OSHA requirements.

TABLE 1

SUMMARY OF WORKER TRAINING REQUIREMENTS

**TABLE 1: Summary of Worker Training Requirements
Hazardous Waste Sites and Hexavalent Chromium Standard**

Type of Workers	Hexavalent Chromium Standard Awareness Training	40-Hour OSHA Hazwoper Training	24-Hour OSHA Hazwoper Training ⁽¹⁾	On The Job Training	8-hour refresher	8-hour Supervisory	Respiratory Protection	Medical Monitoring ⁽²⁾	Hazard Communication ⁽³⁾
Hands-On Site Workers (Site Owner, Operators and/or Contractors or Other Parties)	Required for those working in exclusion zone/regulated area who maybe exposed to COPR or hexavalent chromium	Required on hazardous waste sites for site workers. Site workers may potentially be required to wear respirators. This training applies to workers who may be directly exposed (direct contact) to COPR or hexavalent chromium. While the use of respiratory protection isn't expected to be required, this would allow the use of repiratory protection should site conditions warrant	Not applicable - superceded by 40-hour training	3 Days	Required annually	Required if directly supervises other workers	Respiratory protection program is required for workers who work on hazardous waste sites	Medical monitoring is required for workers who work on hazardous waste sites. Typically, HAZWOPER physicals also cover medical monitoring requirements under the Hexavalent Chromium Standard (verify with examining physician)	Hazard Communication Program is applicable for chemical usage including any chemicals brought onsite for use during site work.
Supervisory Type Personnel (Site Owner, Operators and/or Contractors or Other Parties)	Required for those working in exclusion zone/regulated area who maybe exposed to COPR or hexavalent chromium	Not required	Minimum Training allowable for working on hazardous waste sites and typically does not include in-depth coverage of respiratory protection and level C and B personal protection equipment. Cannot be used if respiratory protection will be required.	1 Day	Required annually	Required if directly supervises other workers	These types of workers are unlikely to be exposed to levels above the PEL/TLV therefore, the need for respiratory protection is not likely to be required	Workers are not expected to be exposed to elevated levels above the PEL/TLV, medical monitoring is not likely required under the OSHA Standard	Hazard Communication Program is applicable for chemical usage including any chemicals brought onsite for use during site work.

This table is provided for reference purposes; all parties conducting work at the subject site are responsible to verify applicability and comply with current requirements.

⁽¹⁾ Workers who have only received 24-hour of initial training who then need to wear a respirator will first be required to complete an additional 16 hour of classroom training and two additional days of on the job training and be enrolled in a medical monitoring program. If use of respirator is likely, then worker should receive 40-hours of initial training.

⁽²⁾ Medical monitoring is required under the Hazardous Waste Operations and Emergency Response (HAZWOPER) standard (29 CFR 1926.65) and the Hexavalent Chromium Standard (29 CFR 1926.1126) if on site more than 30 days per year and exposed to hazardous waste or hexavalent chromium above applicable exposure limits (PEL/TLVs). In addition, medical clearance is required prior to wearing a respirator (29 CFR 1910.134). *If required, medical exams include baseline physicals, periodic exams (typically annually), and exit physicals. The content and frequency of medical exams must be determined in consultation with the BMUA's medical consultant/physican; typical medical exam requirements include: occupational/medical history, physical exam, blood/urine test, ability to wear PPE (e.g., pulmonary function testing, EKG), and baseline monitoring based on potential onsite exposure to particular contaminants (e.g., hexavalent chromium). For further information, refer to OSHA Guidance Manual for Hazardous Waste Site Activities at <http://www.cdc.gov/niosh/85-115.html>*

⁽³⁾ *Hazard Communication is applicable to hazardous substances such as any chemical brought onsite for use during site work. For work on hazardous waste sites, a Site Health and Safety Plan would be required to be prepared and implemented by the site remediation contractor to address potential exposure to contaminated soils and/or groundwater. For more information, refer to the OSHA Hazard Communication Standard at <http://www.osha.gov/dsg/hazcom/oshacomplianceassistance.html>*

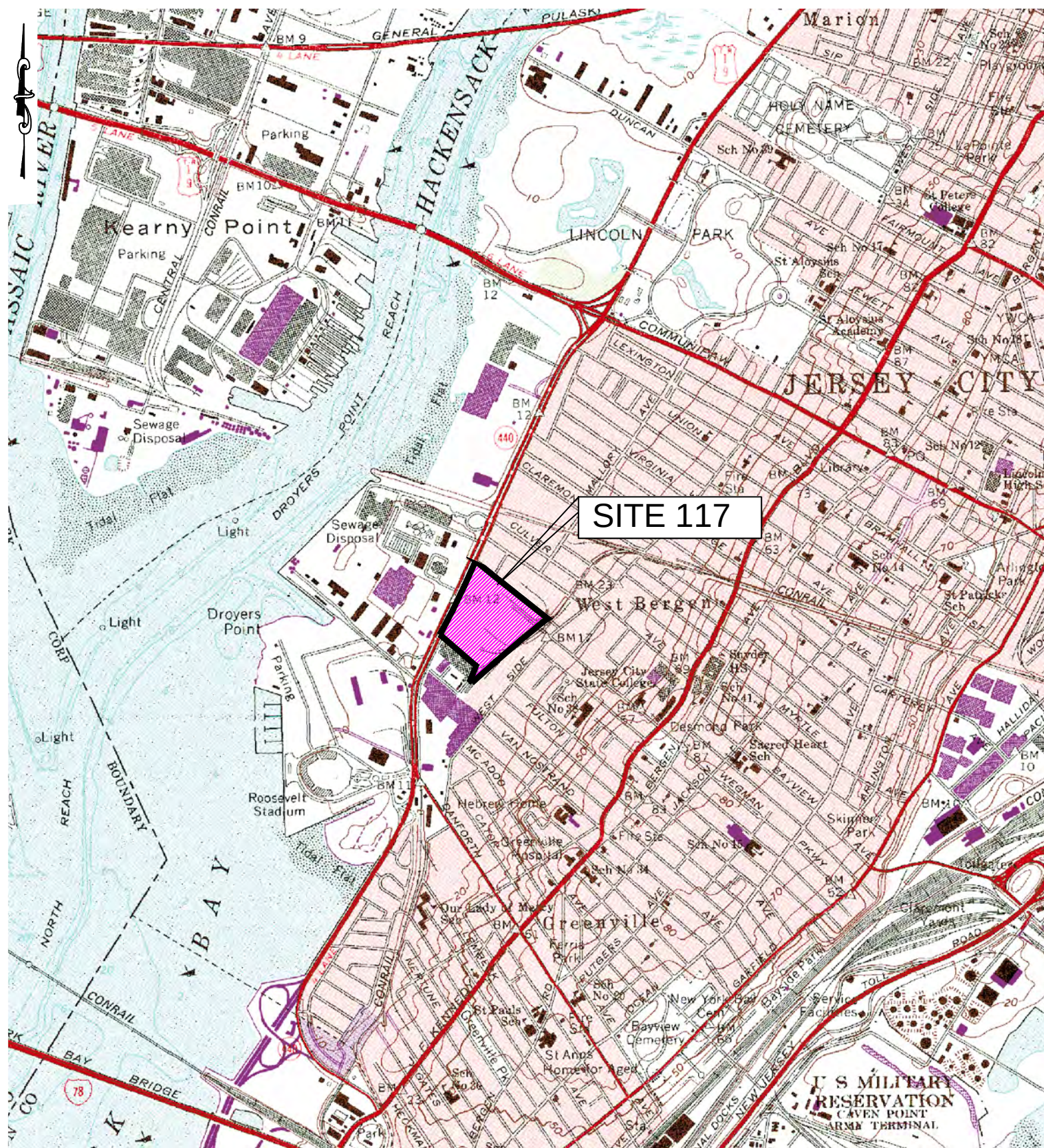
APPENDIX A

FIGURES

APPENDIX A-1

SITE LOCATION MAP

SITE 117 - FORMER RYERSON STEEL SITE



SOURCE: USGS QUADRANGLE MAP, 7.5 MIN SERIES
JERSEY CITY, NJ-NY 1967, PHOTO REVISED 1981

NOTE:
REFER TO OTHER EXHIBIT FIGURES FOR DETAILS

0 2000 4000
SCALE IN FEET

AMEC PROJ No.: 3480050361
DRAWING: 3480050136-6100-A1VM-0000

PREPARED/DATE: STR 08/23/13
CHECKED/DATE: CMR 08/23/13



ENVIRONMENT & INFRASTRUCTURE
200 AMERICAN METRO BLVD, SUITE 113
HAMILTON, NEW JERSEY 08619

SITE LOCATION MAP
SA 5 - SITE 117 FORMER RYERSON STEEL
JERSEY CITY, NEW JERSEY

APPENDIX A-2

**RESTRICTED AREAS AND ENGINEERING CONTROL LOCATION MAP
SITE 117 - FORMER RYERSON STEEL SITE**

LEGEND



AREA OF DOUBLE LINER ABOVE AND BELOW CHROMIUM CONTAMINATED SOIL CAP



ASPHALT PAVEMENT & GEOMEMBRANE LINER CAP



ASPHALT PAVEMENT CAP ONLY



EXISTING BUILDING CONCRETE SLAB & GEOMEMBRANE LINER CAP



CONCRETE & GEOMEMBRANE LINER CAP

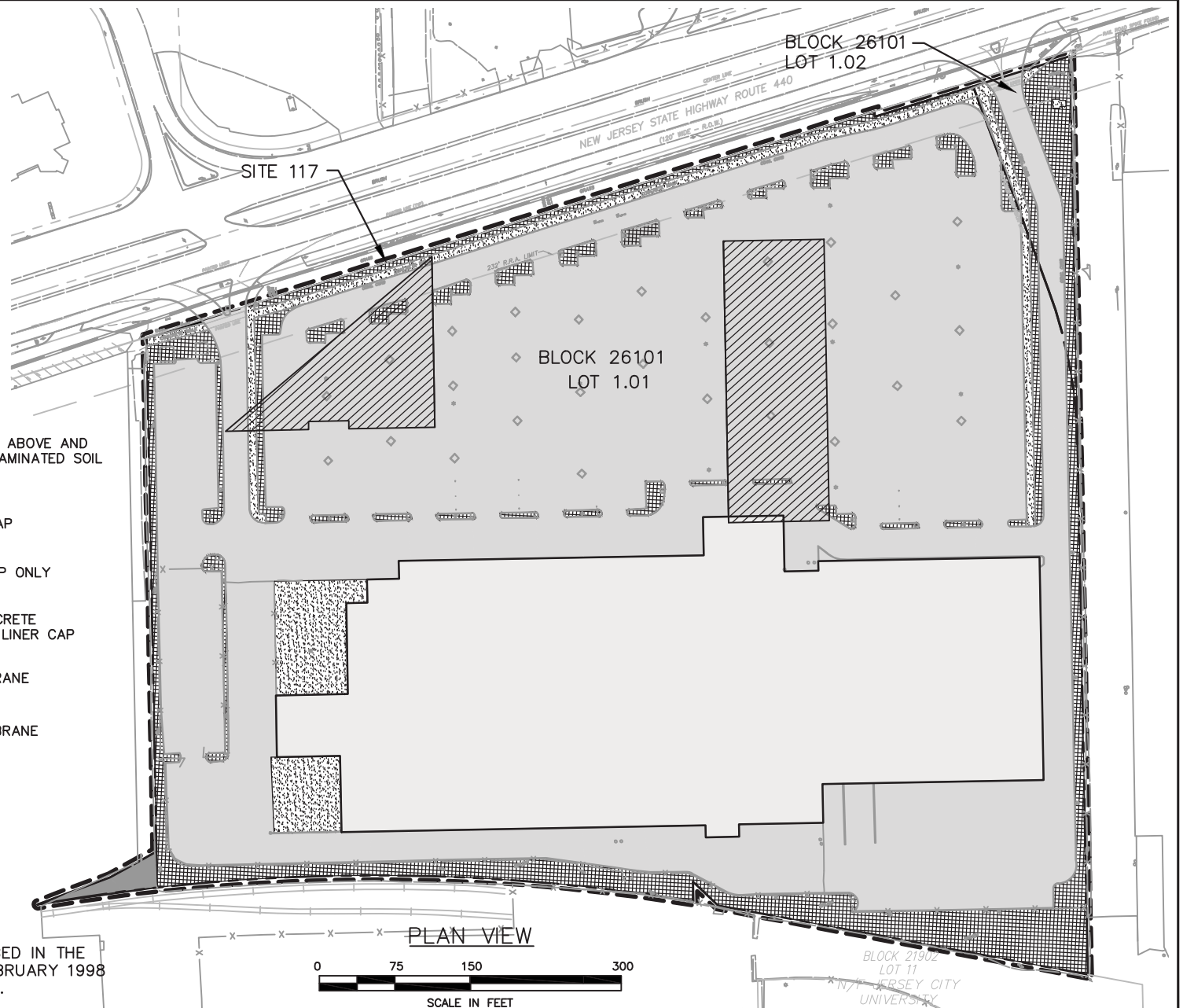


VEGETATIVE & GEOMEMBRANE LINER CAP

--- LOT LINE

--- RESTRICTED AREA

REFERENCE
ENGINEERING CONTROLS ARE DESCRIBED IN THE
REMEDIAL ACTION REPORT DATED FEBRUARY 1998
PREPARED BY ENVIRO-SCIENCES, INC.



PLAN VIEW

0 75 150 300

SCALE IN FEET

REV.	DATE	STATUS	DFT BY	CHKD BY

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DRAWING: 3480050136-6100-B1EC-1170

PREPARED/DATE: STR 08/23/13
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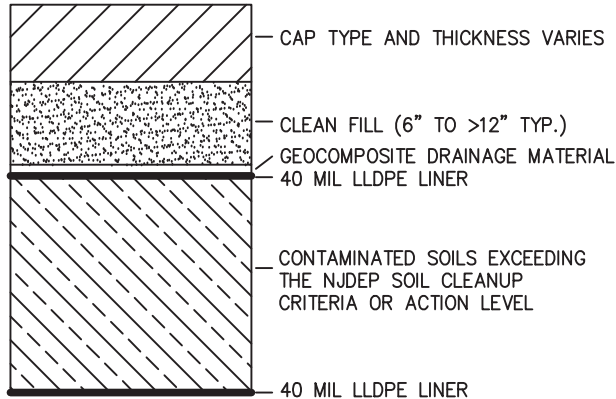


ENVIRONMENT & INFRASTRUCTURE
200 AMERICAN METRO BLVD, SUITE 113
HAMILTON, NEW JERSEY 08619

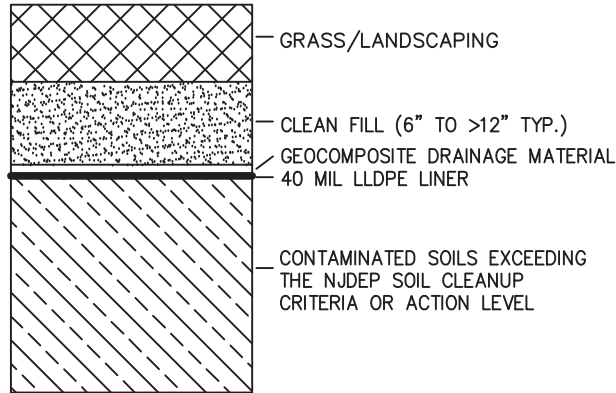
RESTRICTED AREAS AND ENGINEERING
CONTROL LOCATION MAP
SA 5 - SITE 117 FORMER RYERSON STEEL
JERSEY CITY, NEW JERSEY

APPENDIX A-3

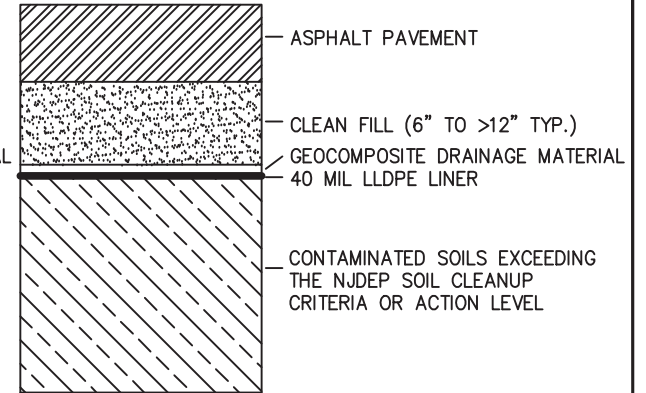
**ENGINEERING CONTROL AS-BUILT DIAGRAM
SITE 117 - FORMER RYERSON STEEL**



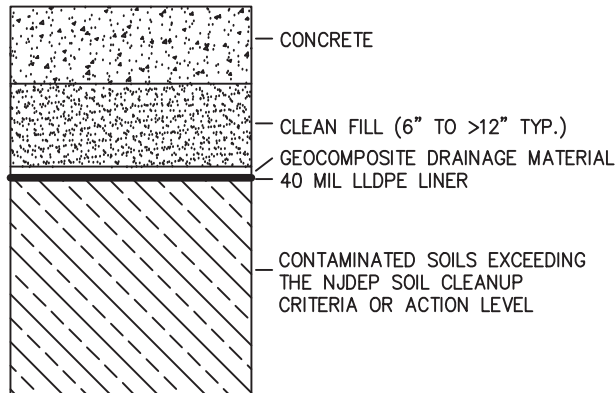
DOUBLE LINER
ABOVE AND BELOW
CONTAMINATED SOIL
CAP



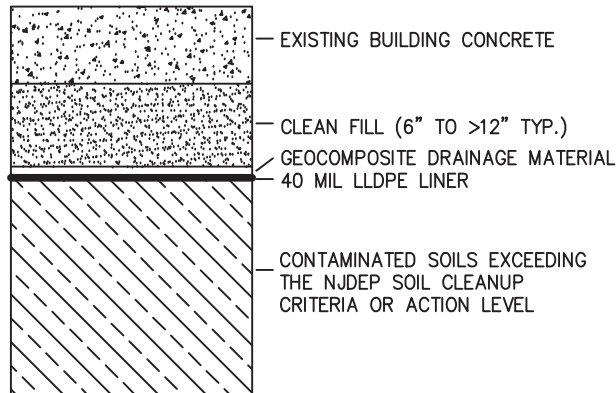
VEGETATIVE &
GEOMEMBRANE
LINER CAP



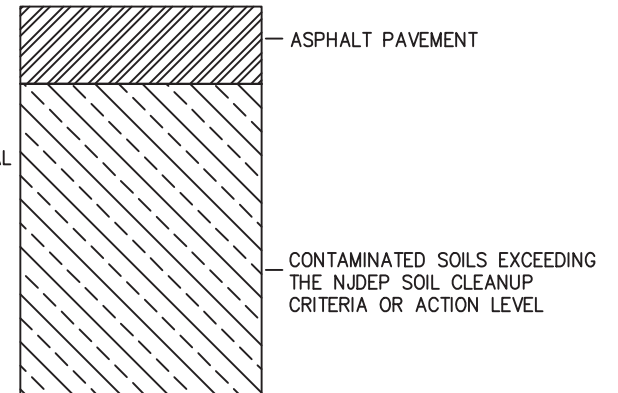
ASPHALT PAVEMENT
& GEOMEMBRANE
LINER CAP



CONCRETE &
GEOMEMBRANE
LINER CAP



EXISTING BUILDING
CONCRETE SLAB &
GEOMEMBRANE
LINER CAP



ASPHALT PAVEMENT
CAP

REFERENCE
ENGINEERING CONTROLS ARE DESCRIBED IN THE
REMEDIAL ACTION REPORT DATED FEBRUARY 1998
PREPARED BY ENVIRO-SCIENCES, INC.

REV.	DATE	STATUS	DFT BY	CHKD BY

AMEC PROJ No.: 3480050361
DRAWING: 3480050136-6100-B1EC-0000

PREPARED/DATE: STR 08/23/13
CHECKED/DATE: CMR 08/23/13

amec
ENVIRONMENT & INFRASTRUCTURE
200 AMERICAN METRO BLVD, SUITE 113
HAMILTON, NEW JERSEY 08619

ENGINEERING CONTROL
AS-BUILT DIAGRAM
SA 5 - SITE 117 FORMER RYERSON STEEL
JERSEY CITY, NEW JERSEY

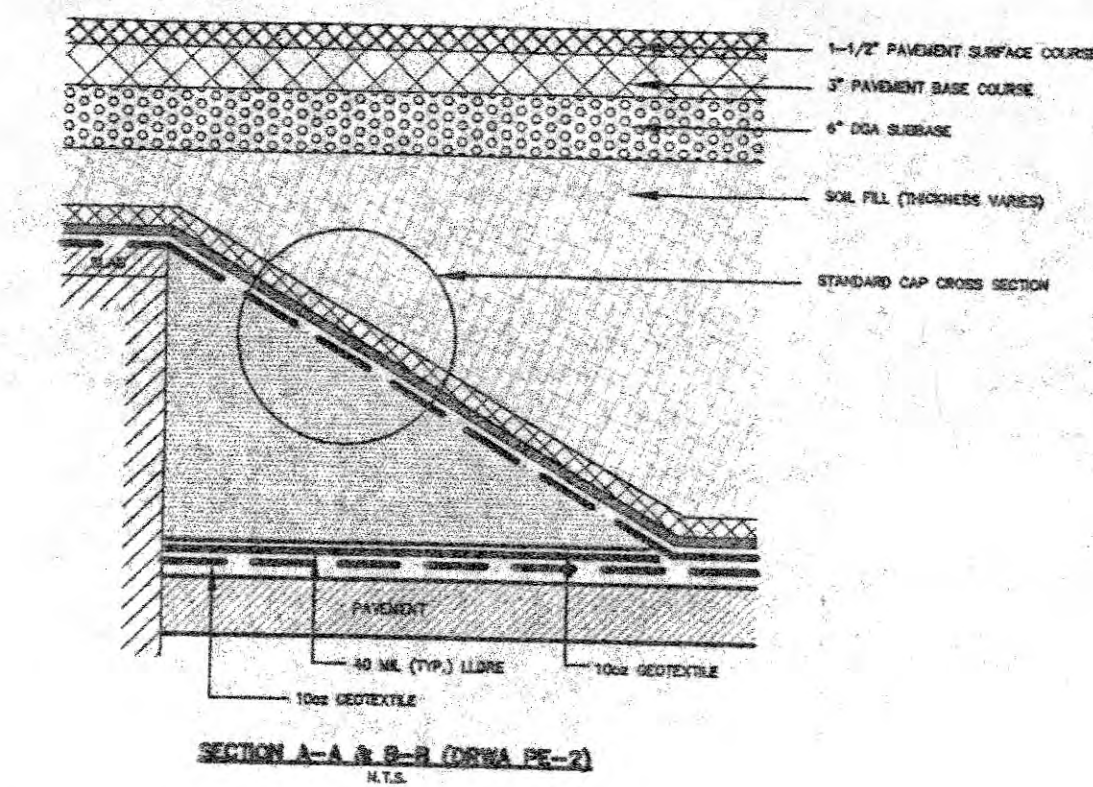
APPENDIX A-4

MEMBRANE GRADING PLAN/TYPICAL CROSS-SECTIONS & DETAILS (McNally Engineering, 1997)

SITE 117 - FORMER RYERSON STEEL

NOTE: The membrane grading plan contains spot elevation data associated with placement of the liner. The elevation data provides an estimate of the liner elevation and can be compared with current surface elevation survey data to provide an estimate on the amount of fill material above the liner. The cross-sections show the liner elevation across the site and details regarding liner placement in the area of structures and utilities.

- ▽ 12.00 FOOTING SPOT MEMBRANE COMPOSITE ELEVATION
- ⊗ 12.00 UTILITY POLE MEMBRANE COMPOSITE ELEVATION
- EXISTING SPOT ELEVATION
- x 10.02 PROPOSED SPOT MEMBRANE COMPOSITE ELEVATION
- ⊠ 12.00 LIGHT POLE MEMBRANE COMPOSITE ELEVATION
- TRENCH EXCAVATION
- ⊖ AREA OF 6" OF FILL TO ELIMINATE LOW POINT
- HIGH FLOW NET AREA
- PROPOSED CONTAMINATED STORAGE AREA WITH NO UNDERLYING MEMBRANE ABOVE EXISTING CONCRETE
- PROPOSED CONTAMINATED STORAGE AREA (IF NEEDED) WITH UNDERLYING MEMBRANE



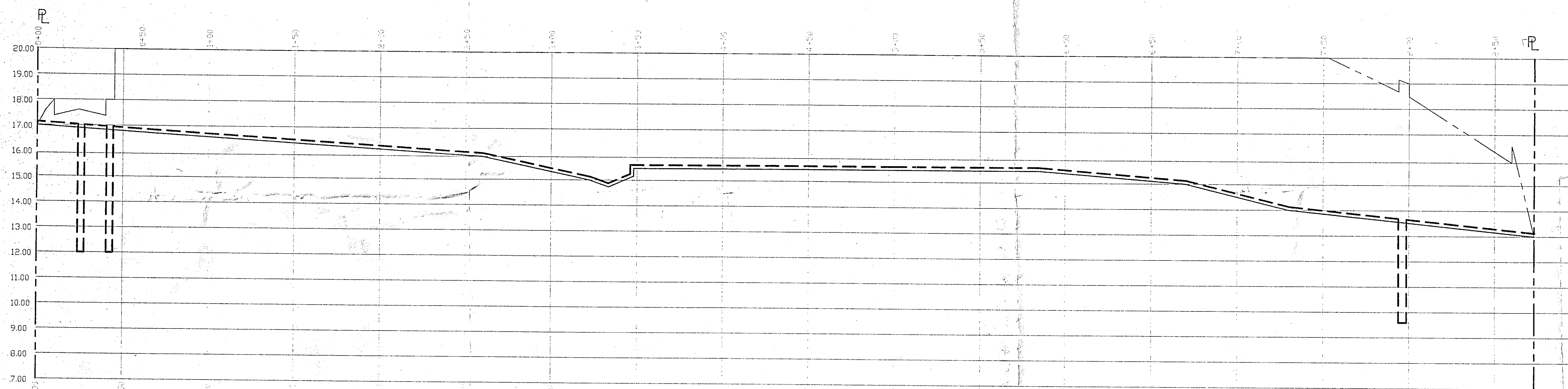
NOTES FOR GEOSYNTHETIC MATERIALS:

1. THE CONTRACTOR MAY PROVIDE TWO PRODUCTS TO MEET THE TRANSMISSIVITY REQUIREMENTS FOR THE GEOSYNTHETIC DRAINAGE MATERIAL. IF SO, THE HIGH FLOW PRODUCT WILL BE DEPLOYED IN THE SHADED AREAS SHOWN ON THIS SHEET. THE UNSHADED AREAS CAN PROVIDED IN THE TECHNICAL SPECIFICATIONS.
2. THE HIGH FLOW PRODUCT SHALL BE DEPLOYED WITH THE MACHINE DIRECTION PERPENDICULAR TO THE CLOSEST SITE PROPERTY LINE.

NOTE:
AN INVESTIGATION OF EXISTING SOILS SHOULD BE DONE PRIOR TO CONSTRUCTION. QUALITY ENGINEERING NAMES NO REPRESENTATIONS AS TO THE SATURABILITY OF EXISTING SOIL AS FILL MATERIAL.

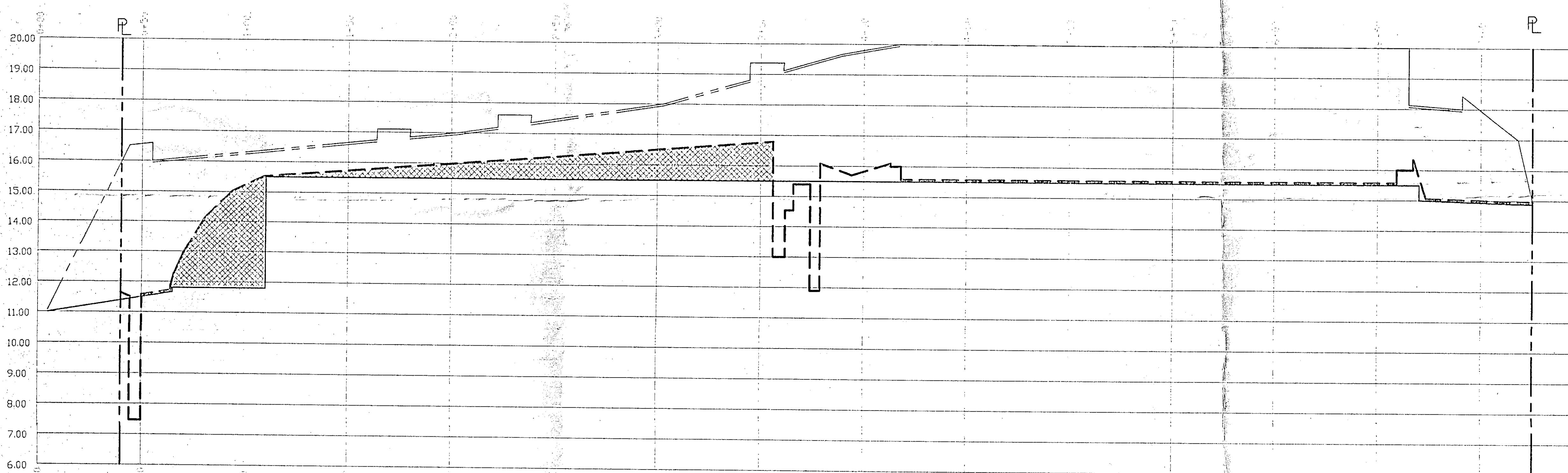
DRAWING TITLE MEMBRANE GRADING PLAN	
PROJECT No: 96204	
DRAWN BY: S.T.R.	CHECKED BY: M.M.
MICHAEL B. McNALLY PROFESSIONAL ENGINEER AND LAND SURVEYOR No.16032	
440 COMMONS NJ STATE HWY. 440 JERSEY CITY, NEW JERSEY MCNALLY ENGINEERING 393 Ramapo Valley Road Suite # 4 Oakland, New Jersey, 07438 (201) 337-9051	

NOTE: ELEVATIONS ARE N.G.V.D. 1929 DATUM



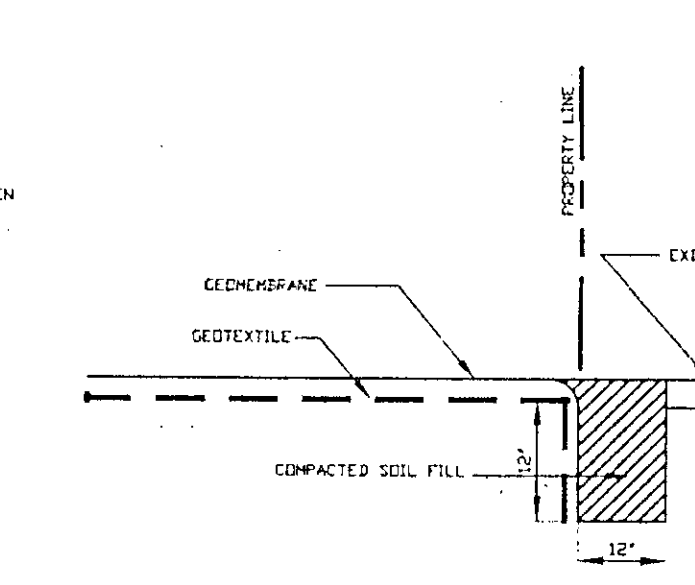
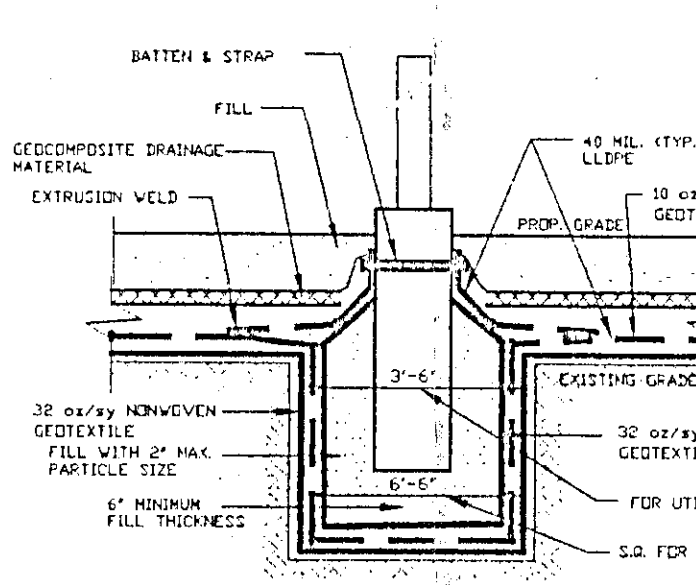
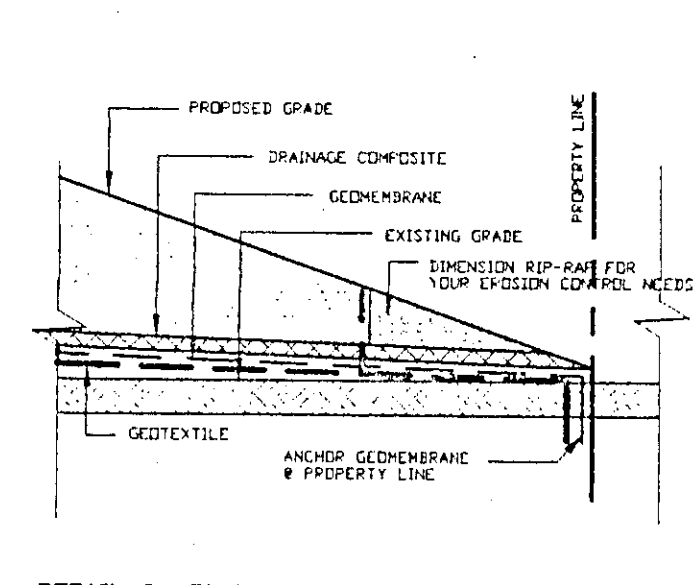
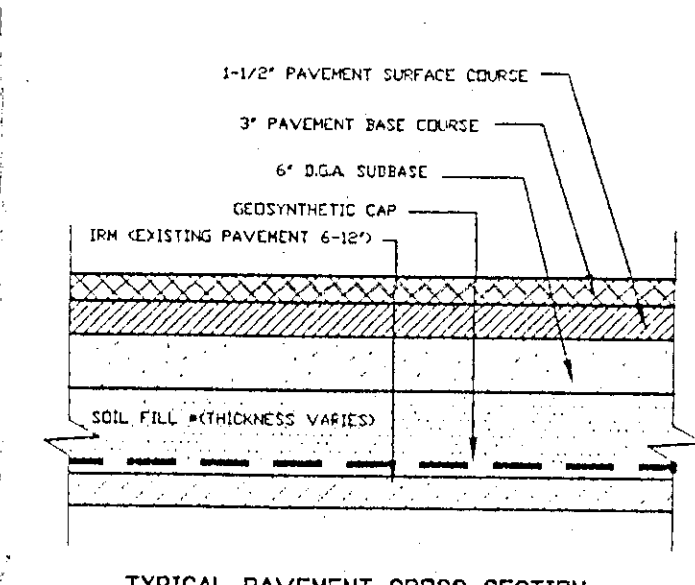
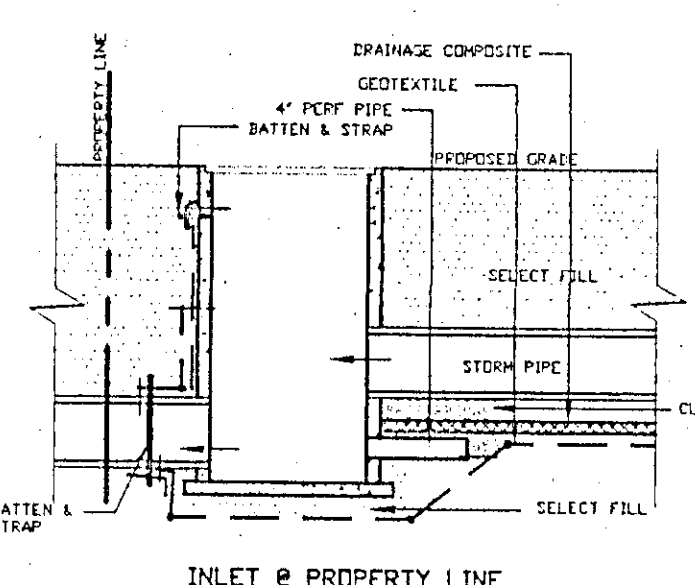
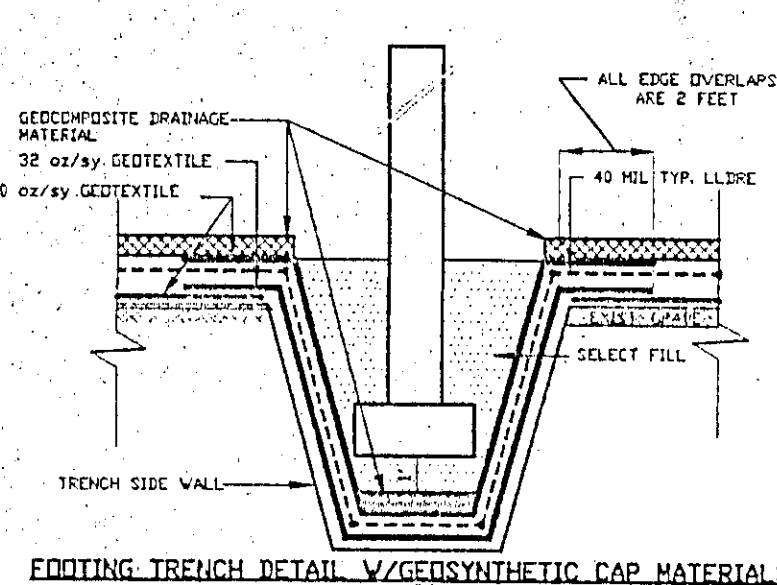
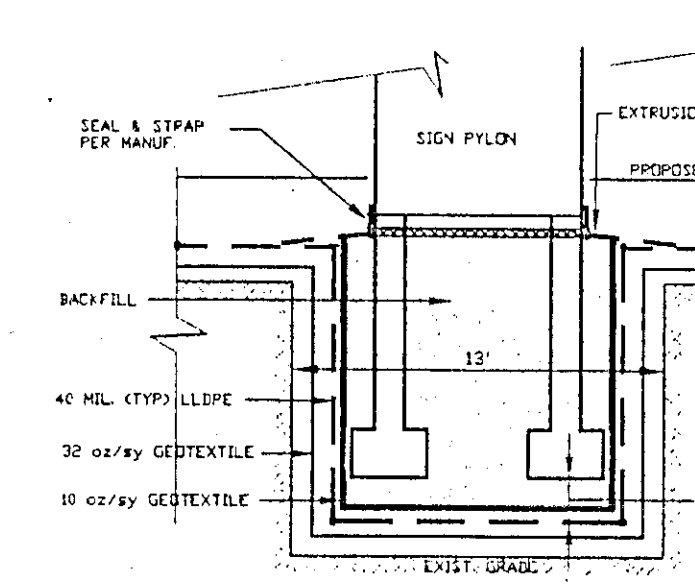
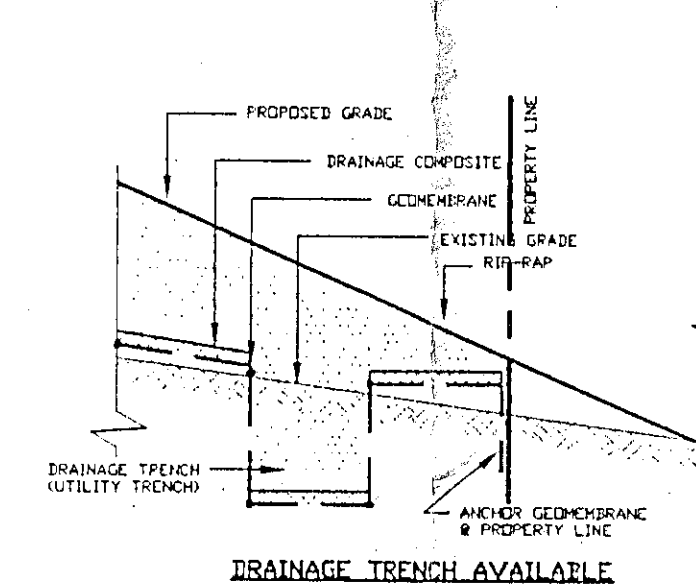
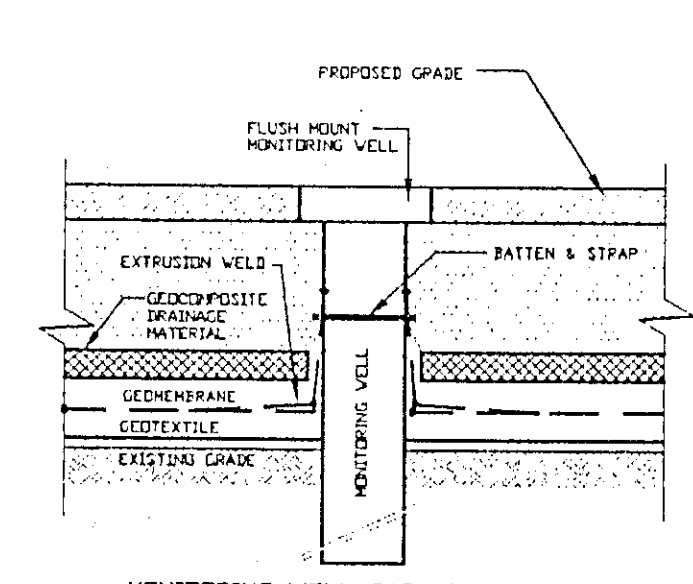
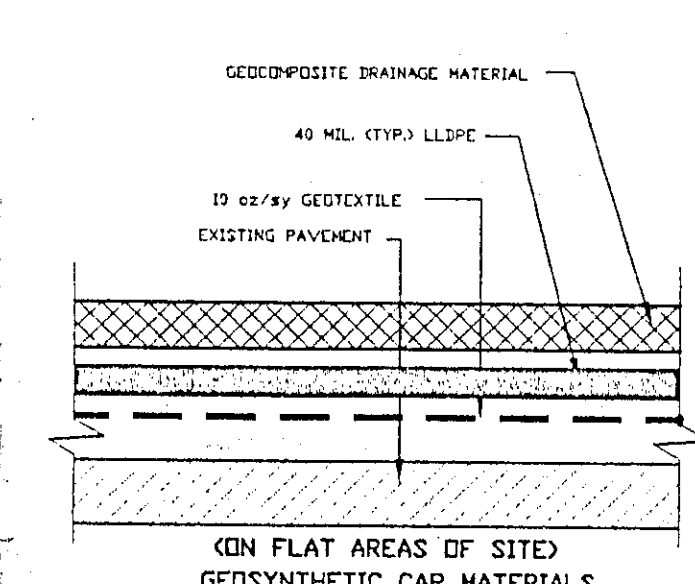
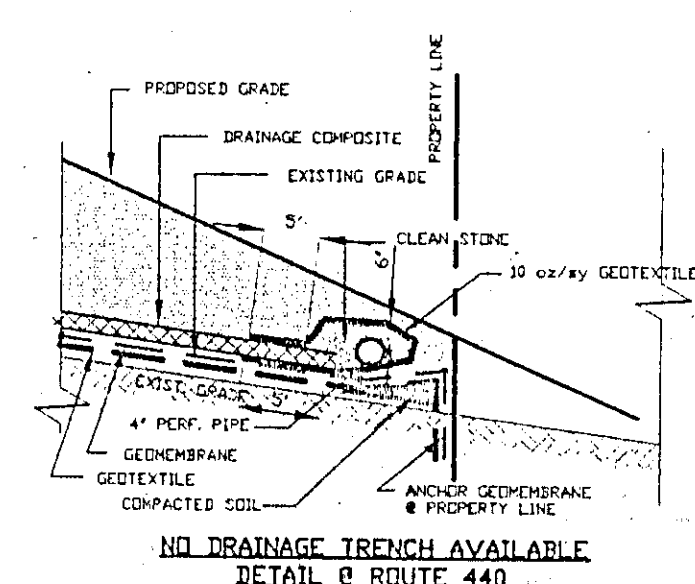
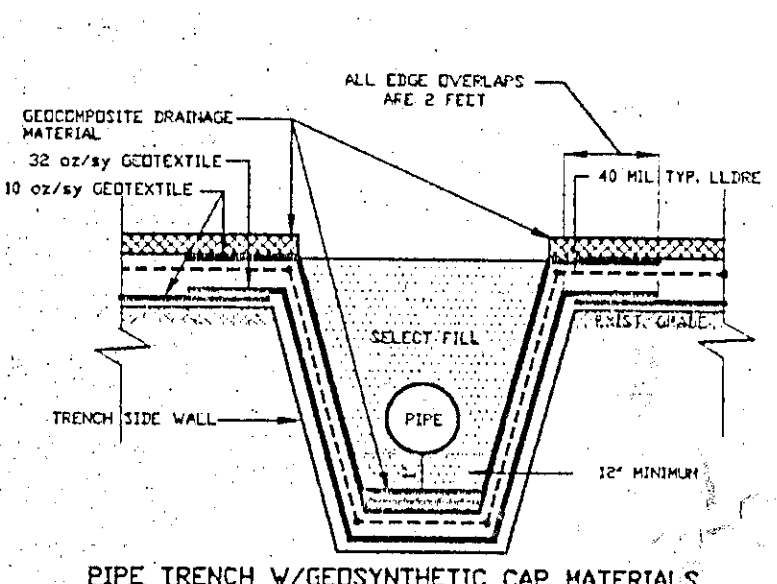
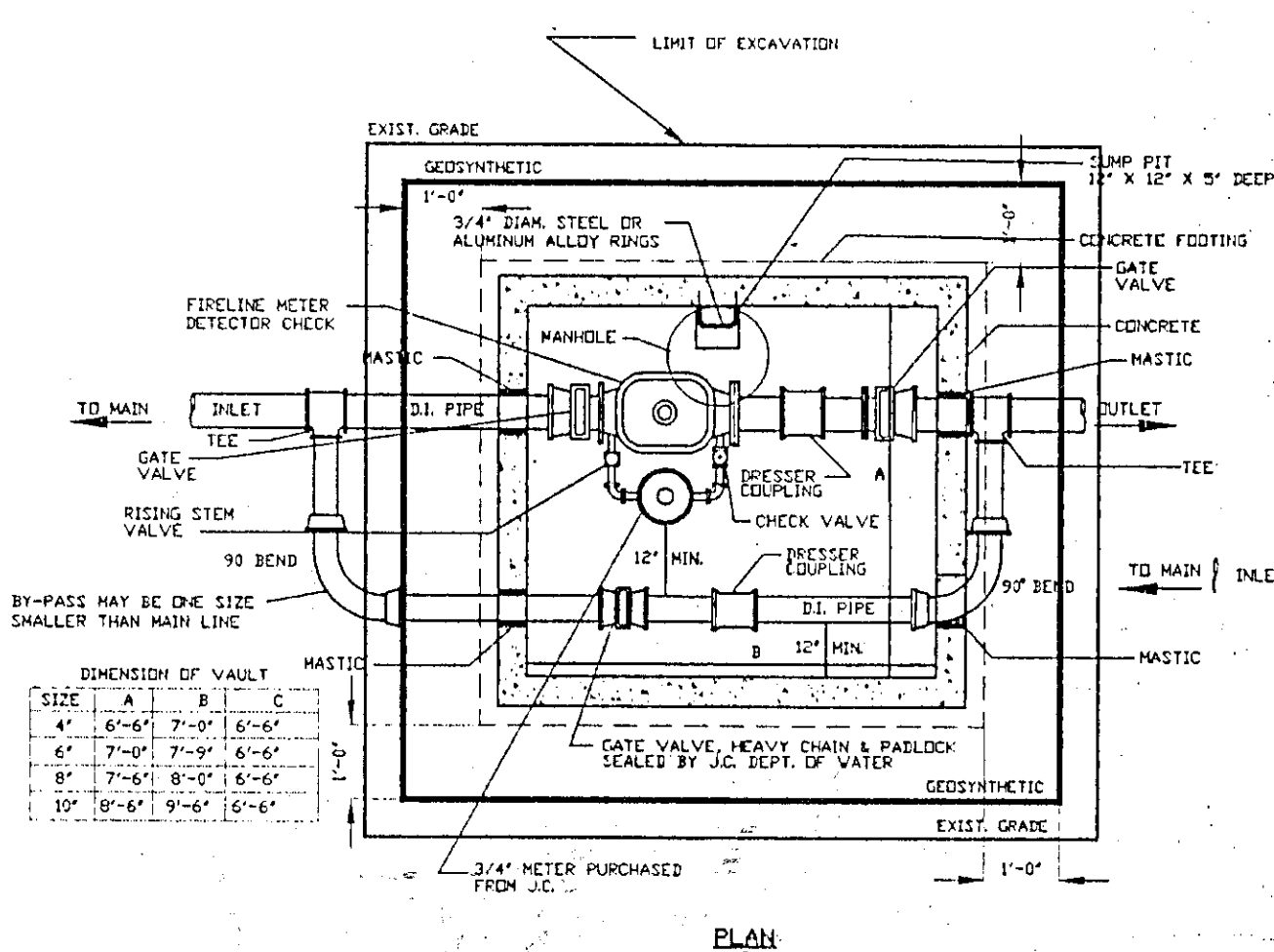
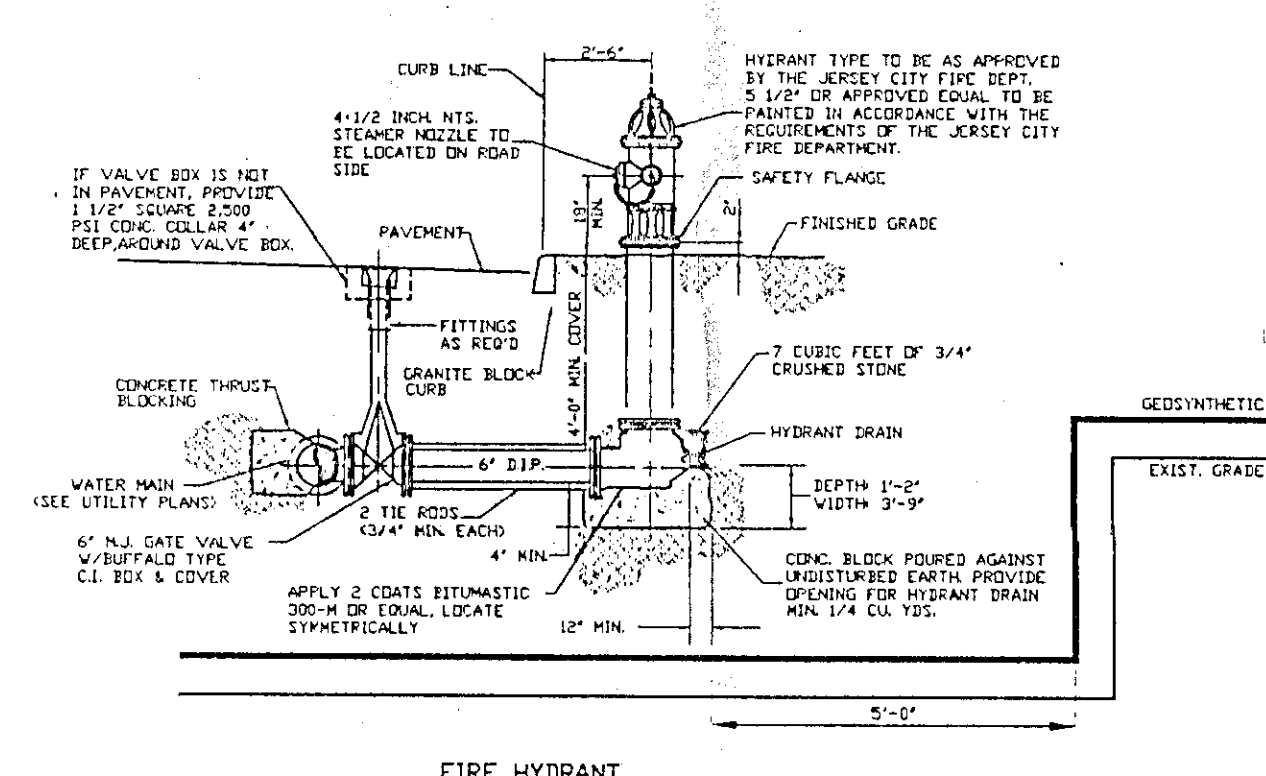
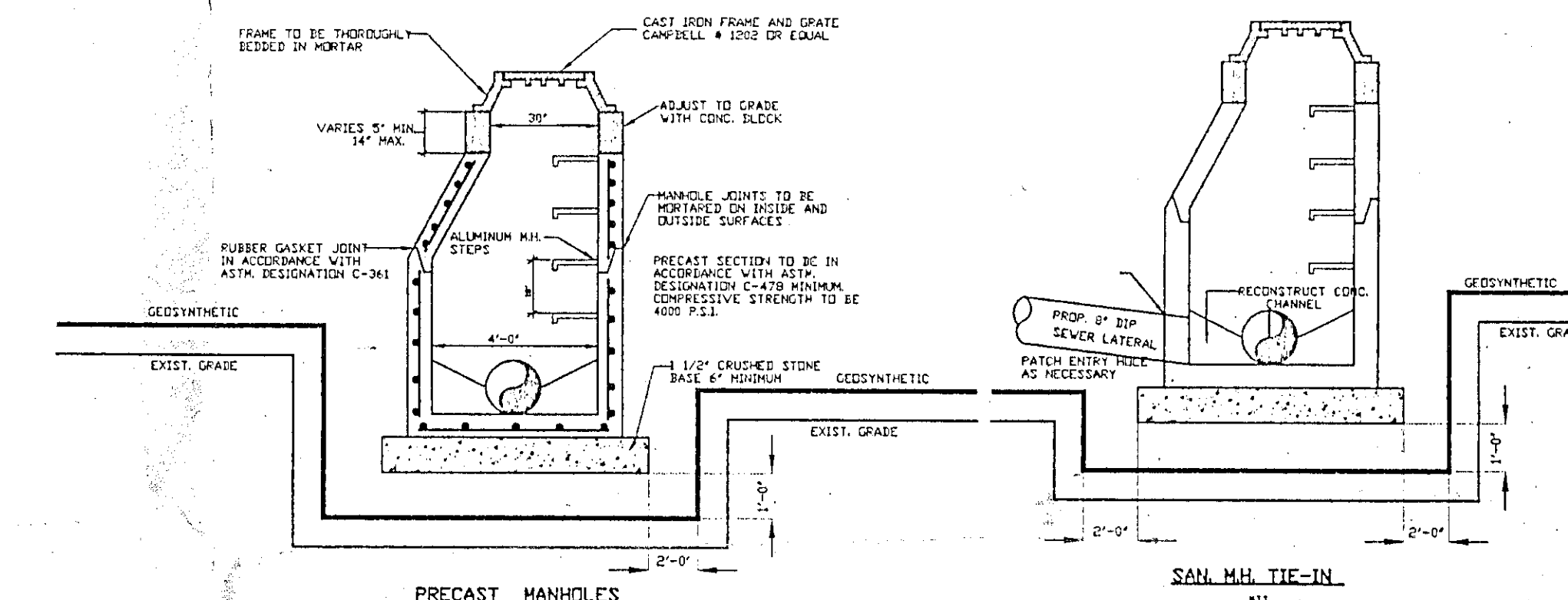
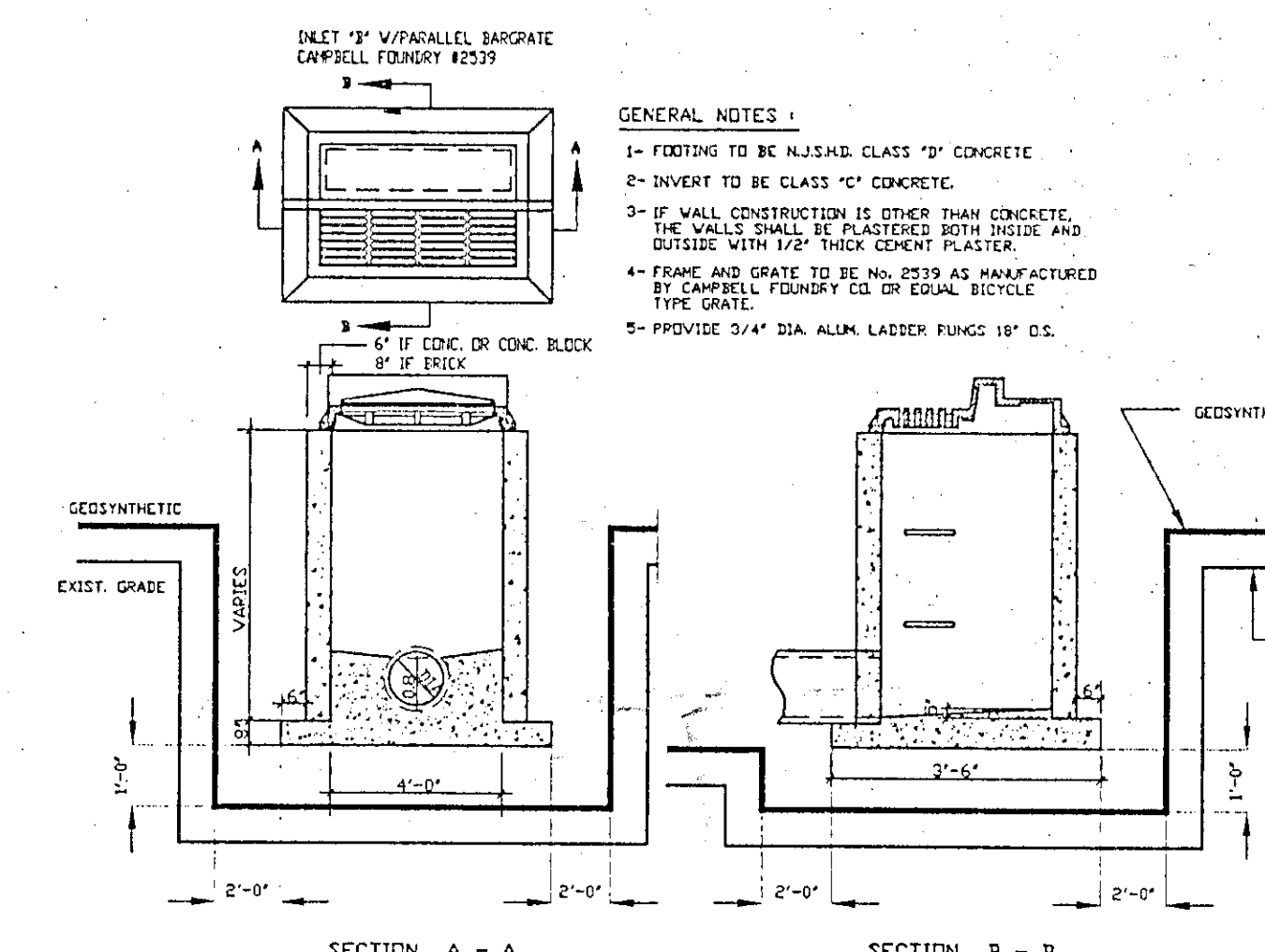
SCALE HORIZON. 1" = 30'
SCALE VERT. 1" = 2'

TYPICAL NORTH-SOUTH CROSS-SECTION



SCALE HORIZON. 1" = 30'
SCALE VERT. 1" = 2'

TYPICAL WEST-EAST CROSS-SECTION



LEGEND

---	EXIST. GRADE
---	PROPOSED GEOSYNTHETIC CAP
---	PROPOSED VEGETATED GRADE
---	PROPOSED ASPHALT
---	CONTAMINATED SOIL STORAGE AREA

TYPICAL CROSS-SECTION & DETAILS 440 COMMONS NJ STATE HWY. 440 JERSEY CITY, NEW JERSEY MCNALLY ENGINEERING 388 Ramapo Valley Road Suite 44 Oakland, New Jersey, 07438 (201) 397-8081	
DRAWN BY: N.A. CHECKED BY: M.M.G. PROJECT No: 96804 MICHAEL B. McNALLY PROFESSIONAL ENGINEER AND LAND SURVEYOR No.16032	SCALE: AS SHOWN DATE: 05/30/97 SHEET No: 1 OF 8

APPENDIX B

FACT SHEETS: CHROMIUM INFORMATION AND POTENTIAL HEALTH HAZARDS

This fact sheet answers the most frequently asked health questions (FAQs) about chromium. For more information, call the ATSDR Information Center at 1-800-232-4636. This fact sheet is one in a series of summaries about hazardous substances and their health effects. It is important you understand this information because this substance may harm you. The effects of exposure to any hazardous substance depend on the dose, the duration, how you are exposed, personal traits and habits, and whether other chemicals are present.

HIGHLIGHTS: Exposure to chromium occurs from ingesting contaminated food or drinking water or breathing contaminated workplace air. Chromium(VI) at high levels can damage the nose and cause cancer. Ingesting high levels of chromium(VI) may result in anemia or damage to the stomach or intestines. Chromium(III) is an essential nutrient. Chromium has been found in at least 1,127 of the 1,669 National Priorities List sites identified by the Environmental Protection Agency (EPA).

What is chromium?

Chromium is a naturally occurring element found in rocks, animals, plants, and soil. It can exist in several different forms. Depending on the form it takes, it can be a liquid, solid, or gas. The most common forms are chromium(0), chromium(III), and chromium(VI). No taste or odor is associated with chromium compounds.

The metal chromium, which is the chromium(0) form, is used for making steel. Chromium(VI) and chromium(III) are used for chrome plating, dyes and pigments, leather tanning, and wood preserving.

What happens to chromium when it enters the environment?

- ☐ Chromium can be found in air, soil, and water after release from the manufacture, use, and disposal of chromium-based products, and during the manufacturing process.
- ☐ Chromium does not usually remain in the atmosphere, but is deposited into the soil and water.
- ☐ Chromium can easily change from one form to another in water and soil, depending on the conditions present.
- ☐ Fish do not accumulate much chromium in their bodies from water.

How might I be exposed to chromium?

- ☐ Eating food containing chromium(III).

- ☐ Breathing contaminated workplace air or skin contact during use in the workplace.
- ☐ Drinking contaminated well water.
- ☐ Living near uncontrolled hazardous waste sites containing chromium or industries that use chromium.

How can chromium affect my health?

Chromium(III) is an essential nutrient that helps the body use sugar, protein, and fat.

Breathing high levels of chromium(VI) can cause irritation to the lining of the nose, nose ulcers, runny nose, and breathing problems, such as asthma, cough, shortness of breath, or wheezing. The concentrations of chromium in air that can cause these effects may be different for different types of chromium compounds, with effects occurring at much lower concentrations for chromium(VI) compared to chromium(III).

The main health problems seen in animals following ingestion of chromium(VI) compounds are irritation and ulcers in the stomach and small intestine and anemia. Chromium(III) compounds are much less toxic and do not appear to cause these problems.

Sperm damage and damage to the male reproductive system have also been seen in laboratory animals exposed to chromium(VI).

Health Effects of Hexavalent Chromium

Hexavalent chromium is a toxic form of the element chromium. Hexavalent chromium compounds are man-made and widely used in many different industries.

Some major industrial sources of hexavalent chromium are:

- chromate pigments in dyes, paints, inks, and plastics
- chromates added as anti-corrosive agents to paints, primers and other surface coatings
- chrome plating by depositing chromium metal onto an item's surface using a solution of chromic acid
- particles released during smelting of ferro-chromium ore
- fume from welding stainless steel or nonferrous chromium alloys
- impurity present in portland cement.

How hexavalent chromium can harm employees

Workplace exposure to hexavalent chromium may cause the following health effects:

- lung cancer in workers who breathe airborne hexavalent chromium
- irritation or damage to the nose, throat, and lung (respiratory tract) if hexavalent chromium is breathed at high levels
- irritation or damage to the eyes and skin if hexavalent chromium contacts these organs in high concentrations.

How hexavalent chromium affects the nose, throat and lungs

Breathing in high levels of hexavalent chromium can cause irritation to the nose and throat. Symptoms may include runny nose, sneezing, coughing, itching and a burning sensation.

Repeated or prolonged exposure can cause sores to develop in the nose and result in nosebleeds. If the damage is severe, the nasal septum (wall separating the nasal passages) develops a hole in it (perforation).

Breathing small amounts of hexavalent chromium even for long periods does not cause respiratory tract irritation in most people.

Some employees become allergic to hexavalent chromium so that inhaling chromate compounds can cause asthma symptoms such as wheezing and shortness of breath.

How hexavalent chromium affects the skin

Some employees can also develop an allergic skin reaction, called allergic contact dermatitis. This occurs from handling liquids or solids containing hexavalent chromium. Once an employee becomes allergic, brief skin contact causes swelling and a red, itchy rash that becomes crusty and thickened with prolonged exposure. Allergic contact dermatitis is long-lasting and more severe with repeated skin contact.

Direct skin contact with hexavalent chromium can cause a non-allergic skin irritation. Contact with non-intact skin can also lead to chrome ulcers. These are small crusted skin sores with a rounded border. They heal slowly and leave scars.

How employees can be exposed to hexavalent chromium

Employees can inhale airborne hexavalent chromium as a dust, fume or mist while:

- producing chromate pigments and powders; chromic acid; chromium catalysts, dyes, and coatings
- working near chrome electroplating
- welding and hotworking stainless steel, high chrome alloys and chrome-coated metal
- applying and removing chromate-containing paints and other surface coatings.



Right to Know Hazardous Substance Fact Sheet

Common Name: **CHROMIUM**

Synonyms: Chrome; Metallic Chromium

Chemical Name: Chromium

Date: January 2000 Revision: March 2009

Description and Use

Chromium is a hard, gray, odorless solid with a metallic luster. It is used in stainless and alloy steels, in making alloys, and as an isotope in medicine and research.

Reasons for Citation

- ▶ **Chromium** is on the Right to Know Hazardous Substance List because it is cited by OSHA, ACGIH, DOT, NIOSH, DEP, IARC and EPA.
- ▶ This chemical is on the Special Health Hazard Substance List.

SEE GLOSSARY ON PAGE 5.

FIRST AID

Eye Contact

- ▶ Immediately flush with large amounts of water for at least 30 minutes, lifting upper and lower lids. Remove contact lenses, if worn, while flushing. Seek medical attention.

Skin Contact

- ▶ Quickly remove contaminated clothing. Immediately wash contaminated skin with large amounts of soap and water.

Inhalation

- ▶ Remove the person from exposure
- ▶ Begin rescue breathing (using universal precautions) if breathing has stopped and CPR if heart action has stopped.
- ▶ Transfer promptly to a medical facility.

EMERGENCY NUMBERS

Poison Control: 1-800-222-1222

CHEMTREC: 1-800-424-9300

NJDEP Hotline: 1-877-927-6337

National Response Center: 1-800-424-8802

CAS Number: 7440-47-3

RTK Substance Number: 0432

DOT Number: UN 3089

EMERGENCY RESPONDERS >>>> SEE LAST PAGE

Hazard Summary

Hazard Rating	NJDHSS	NFPA
HEALTH	2	-
FLAMMABILITY	3	-
REACTIVITY	0	-

FLAMMABLE POWDER
POISONOUS GASES ARE PRODUCED IN FIRE
CONTAINERS MAY EXPLODE IN FIRE

Hazard Rating Key: 0=minimal; 1=slight; 2=moderate; 3=serious; 4=severe

- ▶ **Chromium** can affect you when inhaled.
- ▶ Contact can irritate and burn the skin and eyes with possible eye damage.
- ▶ Inhaling **Chromium** can irritate the nose and throat.
- ▶ Exposure to **Chromium fumes** can cause a flu-like illness called *metal fume fever*.
- ▶ **Chromium** may cause a skin allergy and an asthma-like allergy
- ▶ Inhaling **Chromium** can cause a sore and/or a hole in the "bone" (septum) dividing the inner nose.
- ▶ **Chromium** may affect the liver and kidneys.
- ▶ **Chromium** in *powder* form is FLAMMABLE and a DANGEROUS FIRE HAZARD. It may also spontaneously explode in air.

Workplace Exposure Limits

OSHA: The legal airborne permissible exposure limit (PEL) is **1 mg/m³** averaged over an 8-hour workshift.

NIOSH: The recommended airborne exposure limit (REL) is **0.5 mg/m³** averaged over a 8-hour workshift.

ACGIH: The threshold limit value (TLV) is **0.5 mg/m³** averaged over an 8-hour workshift.

Determining Your Exposure

- ▶ Read the product manufacturer's Material Safety Data Sheet (MSDS) and the label to determine product ingredients and important safety and health information about the product mixture.
- ▶ For each individual hazardous ingredient, read the New Jersey Department of Health and Senior Services Hazardous Substance Fact Sheet, available on the RTK Program website (www.nj.gov/health/eoh/rtkweb) or in your facility's RTK Central File or Hazard Communication Standard file.
- ▶ You have a right to this information under the New Jersey Worker and Community Right to Know Act, the Public Employees Occupational Safety and Health (PEOSH) Act if you are a public worker in New Jersey, and under the federal Occupational Safety and Health Act (OSHA) if you are a private worker.
- ▶ The New Jersey Right to Know Act requires most employers to label chemicals in the workplace and requires public employers to provide their employees with information concerning chemical hazards and controls. The federal OSHA Hazard Communication Standard (29 CFR 1910.1200) and the PEOSH Hazard Communication Standard (N.J.A.C. 12:100-7) require employers to provide similar information and training to their employees.

This Fact Sheet is a summary of available information regarding the health hazards that may result from exposure. Duration of exposure, concentration of the substance and other factors will affect your susceptibility to any of the potential effects described below.

Health Hazard Information

Acute Health Effects

The following acute (short-term) health effects may occur immediately or shortly after exposure to **Chromium**:

- ▶ Contact can irritate and burn the skin and eyes with possible eye damage.
- ▶ Inhaling **Chromium** can irritate the nose and throat causing coughing and wheezing.
- ▶ Exposure to **Chromium fumes** can cause "metal fume fever." This is a flu-like illness with symptoms of metallic taste in the mouth, headache, fever and chills, aches, chest tightness and cough. The symptoms may be delayed for several hours after exposure and usually last for a day or two.

Chronic Health Effects

The following chronic (long-term) health effects can occur at some time after exposure to **Chromium** and can last for months or years:

Cancer Hazard

- ▶ While **Chromium** has been tested, it is not classifiable as to its potential to cause cancer.

Reproductive Hazard

- ▶ There is no evidence that **Chromium** affects reproduction. This is based on test results presently available to the NJDHSS from published studies.

Other Effects

- ▶ Inhaling **Chromium** can cause a sore and/or a hole in the "bone" (septum) dividing the inner nose, sometimes with bleeding, discharge, and/or formation of a crust.
- ▶ **Chromium** may cause a skin allergy. If allergy develops, very low future exposure can cause itching and a skin rash.
- ▶ **Chromium** may cause an asthma-like allergy. Future exposure can cause asthma attacks with shortness of breath, wheezing, coughing, and/or chest tightness.
- ▶ Prolonged skin contact can cause burns, blisters and deep ulcers
- ▶ **Chromium** may affect the liver and kidneys.

Medical

Medical Testing

For frequent or potentially high exposure (half the TLV or greater), the following are recommended before beginning work and at regular times after that:

- ▶ Lung function tests. The results may be normal if the person is not having an attack at the time of the test.

If symptoms develop or overexposure is suspected, the following are recommended:

- ▶ Examine your skin periodically for little bumps or blisters, the first sign of "chrome ulcers." If not treated early, these can last for years after exposure.
- ▶ Evaluation by a qualified allergist can help diagnose skin allergy.
- ▶ Liver and kidney function tests

Any evaluation should include a careful history of past and present symptoms with an exam. Medical tests that look for damage already done are not a substitute for controlling exposure.

Request copies of your medical testing. You have a legal right to this information under the OSHA Access to Employee Exposure and Medical Records Standard (29 CFR 1910.1020).

Mixed Exposures

- ▶ Smoking can cause heart disease, lung cancer, emphysema, and other respiratory problems. It may worsen respiratory conditions caused by chemical exposure. Even if you have smoked for a long time, stopping now will reduce your risk of developing health problems.
- ▶ More than light alcohol consumption can cause liver damage. Drinking alcohol can increase the liver damage caused by **Chromium**.

Workplace Controls and Practices

Very toxic chemicals, or those that are reproductive hazards or sensitizers, require expert advice on control measures if a less toxic chemical cannot be substituted. Control measures include: (1) enclosing chemical processes for severely irritating and corrosive chemicals, (2) using local exhaust ventilation for chemicals that may be harmful with a single exposure, and (3) using general ventilation to control exposures to skin and eye irritants. For further information on workplace controls, consult the NIOSH document on Control Banding at www.cdc.gov/niosh/topics/ctrlbanding/.

The following work practices are also recommended:

- ▶ Label process containers.
- ▶ Provide employees with hazard information and training.
- ▶ Monitor airborne chemical concentrations.
- ▶ Use engineering controls if concentrations exceed recommended exposure levels.
- ▶ Provide eye wash fountains and emergency showers.
- ▶ Wash or shower if skin comes in contact with a hazardous material.
- ▶ Always wash at the end of the workshift.
- ▶ Change into clean clothing if clothing becomes contaminated.
- ▶ Do not take contaminated clothing home.
- ▶ Get special training to wash contaminated clothing.
- ▶ Do not eat, smoke, or drink in areas where chemicals are being handled, processed or stored.
- ▶ Wash hands carefully before eating, smoking, drinking, applying cosmetics or using the toilet.

In addition, the following may be useful or required:

- ▶ Before entering a confined space where **Chromium powder** may be present, check to make sure that an explosive concentration does not exist.
- ▶ Use a vacuum or a wet method to reduce dust during clean-up. DO NOT DRY SWEEP.

Personal Protective Equipment

The OSHA Personal Protective Equipment Standard (29 CFR 1910.132) requires employers to determine the appropriate personal protective equipment for each hazard and to train employees on how and when to use protective equipment.

The following recommendations are only guidelines and may not apply to every situation.

Gloves and Clothing

- ▶ Avoid skin contact with **Chromium**. Wear personal protective equipment made from material which can not be permeated or degraded by this substance. Safety equipment suppliers and manufacturers can provide recommendations on the most protective glove and clothing material for your operation.
- ▶ Safety equipment manufacturers recommend Nitrile and Natural Rubber for gloves, and Tyvek®, or the equivalent, as a protective material for clothing.
- ▶ All protective clothing (suits, gloves, footwear, headgear) should be clean, available each day, and put on before work.

Eye Protection

- ▶ Wear eye protection with side shields or goggles.
- ▶ If additional protection is needed for the entire face, use in combination with a face shield. A face shield should not be used without another type of eye protection.

Respiratory Protection

Improper use of respirators is dangerous. Respirators should only be used if the employer has implemented a written program that takes into account workplace conditions, requirements for worker training, respirator fit testing, and medical exams, as described in the OSHA Respiratory Protection Standard (29 CFR 1910.134).

- ▶ Where the potential exists for exposure over **0.5 mg/m³**, use a NIOSH approved negative pressure, air-purifying, particulate filter respirator with an N, R or P95 filter. More protection is provided by a full facepiece respirator than by a half-mask respirator, and even greater protection is provided by a powered-air purifying respirator.
- ▶ Leave the area immediately if (1) while wearing a filter or cartridge respirator you can smell, taste, or otherwise detect **Chromium**, (2) while wearing particulate filters abnormal resistance to breathing is experienced, or (3) eye irritation occurs while wearing a full facepiece respirator. Check to make sure the respirator-to-face seal is still good. If it is, replace the filter or cartridge. If the seal is no longer good, you may need a new respirator.
- ▶ Consider all potential sources of exposure in your workplace. You may need a combination of filters, prefilters or cartridges to protect against different forms of a chemical (such as vapor and mist) or against a mixture of chemicals.
- ▶ Where the potential exists for exposure over **5 mg/m³**, use a NIOSH approved supplied-air respirator with a full facepiece operated in a pressure-demand or other positive-pressure mode. For increased protection use in combination with an auxiliary self-contained breathing apparatus operated in a pressure-demand or other positive-pressure mode.
- ▶ Exposure to **250 mg/m³** is immediately dangerous to life and health. If the possibility of exposure above **250 mg/m³** exists, use a NIOSH approved self-contained breathing apparatus with a full facepiece operated in a pressure-demand or other positive-pressure mode equipped with an emergency escape air cylinder.

Fire Hazards

If employees are expected to fight fires, they must be trained and equipped as stated in the OSHA Fire Brigades Standard (29 CFR 1910.156).

- ▶ Extinguish fire using an agent suitable for type of surrounding fire. **Chromium** itself does not burn.
- ▶ **Chromium** in powder form is FLAMMABLE and a DANGEROUS FIRE HAZARD. It may also spontaneously explode in air.
- ▶ Use dry sand or dry chemical extinguishing agents to fight **Chromium powder** fires.
- ▶ POISONOUS GASES ARE PRODUCED IN FIRE.
- ▶ CONTAINERS MAY EXPLODE IN FIRE.
- ▶ DO NOT get water inside container.

Spills and Emergencies

If employees are required to clean-up spills, they must be properly trained and equipped. The OSHA Hazardous Waste Operations and Emergency Response Standard (29 CFR 1910.120) may apply.

If **Chromium powder** is spilled, take the following steps:

- ▶ Evacuate personnel and secure and control entrance to the area.
- ▶ Eliminate all ignition sources.
- ▶ Moisten spilled material first or use a HEPA-filter vacuum for clean-up and place into sealed containers for disposal.
- ▶ Keep **Chromium powder** out of confined spaces, such as sewers, because of the possibility of an explosion.
- ▶ Ventilate and wash area after clean-up is complete.
- ▶ DO NOT wash into sewer.
- ▶ It may be necessary to contain and dispose of **Chromium** as a HAZARDOUS WASTE. Contact your state Department of Environmental Protection (DEP) or your regional office of the federal Environmental Protection Agency (EPA) for specific recommendations.

Handling and Storage

Prior to working with **Chromium** you should be trained on its proper handling and storage.

- ▶ **Chromium** may react violently or explosively with AMMONIUM NITRATE; CARBON DIOXIDE ATMOSPHERES; BROMINE PENTAFLUORIDE; LITHIUM; NITROGEN OXIDES; and SULFUR DIOXIDE.
- ▶ **Chromium** is not compatible with OXIDIZING AGENTS (such as PERCHLORATES, PEROXIDES, PERMANGANATES, CHLORATES, NITRATES, CHLORINE, BROMINE and FLUORINE); STRONG BASES (such as SODIUM HYDROXIDE and POTASSIUM HYDROXIDE); STRONG ACIDS (such as HYDROCHLORIC and SULFURIC); and ALKALI METALS (such as SODIUM and POTASSIUM).
- ▶ Store in tightly closed containers in a cool, well-ventilated area.
- ▶ Sources of ignition, such as smoking and open flames, are prohibited where **Chromium powder** is used, handled, or stored.

Occupational Health Information Resources

The New Jersey Department of Health and Senior Services, Occupational Health Service, offers multiple services in occupational health. These services include providing informational resources, educational materials, public presentations, and industrial hygiene and medical investigations and evaluations.

For more information, please contact:

New Jersey Department of Health & Senior Services
Right to Know Program
PO Box 368
Trenton, NJ 08625-0368
Phone: 609-984-2202
Fax: 609-984-7407
E-mail: rtk@doh.state.nj.us
Web address: <http://www.nj.gov/health/eoh/rtkweb>

***The Right to Know Hazardous Substance Fact Sheets
are not intended to be copied and sold
for commercial purposes.***

GLOSSARY

ACGIH is the American Conference of Governmental Industrial Hygienists. They publish guidelines called Threshold Limit Values (TLVs) for exposure to workplace chemicals.

Acute Exposure Guideline Levels (AEGs) are established by the EPA. They describe the risk to humans resulting from once-in-a lifetime, or rare, exposure to airborne chemicals.

Boiling point is the temperature at which a substance can change its physical state from a liquid to a gas.

A **carcinogen** is a substance that causes cancer.

The **CAS number** is unique, identifying number, assigned by the Chemical Abstracts Service, to a specific chemical.

CFR is the Code of Federal Regulations, which are the regulations of the United States government.

A **combustible** substance is a solid, liquid or gas that will burn.

A **corrosive** substance is a gas, liquid or solid that causes destruction of human skin or severe corrosion of containers.

DEP is the New Jersey Department of Environmental Protection.

DOT is the Department of Transportation, the federal agency that regulates the transportation of chemicals.

EPA is the Environmental Protection Agency, the federal agency responsible for regulating environmental hazards.

ERG is the Emergency Response Guidebook. It is a guide for emergency responders for transportation emergencies involving hazardous substances.

Emergency Response Planning Guideline (ERPG) values provide estimates of concentration ranges where one reasonably might anticipate observing adverse effects.

A **fetus** is an unborn human or animal.

A **flammable** substance is a solid, liquid, vapor or gas that will ignite easily and burn rapidly.

The **flash point** is the temperature at which a liquid or solid gives off vapor that can form a flammable mixture with air.

IARC is the International Agency for Research on Cancer, a scientific group.

Ionization Potential is the amount of energy needed to remove an electron from an atom or molecule. It is measured in electron volts.

IRIS is the Integrated Risk Information System database on human health effects that may result from exposure to various chemicals, maintained by federal EPA.

LEL or **Lower Explosive Limit**, is the lowest concentration of a combustible substance (gas or vapor) in the air capable of continuing an explosion.

mg/m³ means milligrams of a chemical in a cubic meter of air. It is a measure of concentration (weight/volume).

A **mutagen** is a substance that causes mutations. A **mutation** is a change in the genetic material in a body cell. Mutations can lead to birth defects, miscarriages, or cancer.

NFPA is the National Fire Protection Association. It classifies substances according to their fire and explosion hazard.

NIOSH is the National Institute for Occupational Safety and Health. It tests equipment, evaluates and approves respirators, conducts studies of workplace hazards, and proposes standards to OSHA.

NTP is the National Toxicology Program which tests chemicals and reviews evidence for cancer.

OSHA is the federal Occupational Safety and Health Administration, which adopts and enforces health and safety standards.

PEOSHA is the New Jersey Public Employees Occupational Safety and Health Act, which adopts and enforces health and safety standards in public workplaces.

Permeated is the movement of chemicals through protective materials.

ppm means parts of a substance per million parts of air. It is a measure of concentration by volume in air.

Protective Action Criteria (PAC) are values established by the Department of Energy and are based on AEGs and ERPGs. They are used for emergency planning of chemical release events.

A **reactive** substance is a solid, liquid or gas that releases energy under certain conditions.

STEL is a Short Term Exposure Limit which is usually a 15-minute exposure that should not be exceeded at any time during a work day.

A **teratogen** is a substance that causes birth defects by damaging the fetus.

UEL or **Upper Explosive Limit** is the highest concentration in air above which there is too much fuel (gas or vapor) to begin a reaction or explosion.

Vapor Density is the ratio of the weight of a given volume of one gas to the weight of another (usually *Hydrogen*), at the same temperature and pressure.

The **vapor pressure** is a force exerted by the vapor in equilibrium with the solid or liquid phase of the same substance. The higher the vapor pressure the higher concentration of the substance in air.



Right to Know Hazardous Substance Fact Sheet

Emergency
Responders
Quick Reference

Common Name: **CHROMIUM**

Synonyms: Chrome; Metallic Chromium

CAS No: 7440-47-3

Molecular Formula: Cr

RTK Substance No: 0432

Description: Hard, gray, odorless solid with a metallic luster

HAZARD DATA

Hazard Rating	Firefighting	Reactivity
2 - Health 3 - Fire 0 - Reactivity DOT#: UN 3089 ERG Guide #: 170 Hazard Class: 4.1 (Flammable Solid)	Extinguish fire using an agent suitable for type of surrounding fire. Chromium itself does not burn. Chromium in <i>powder</i> form is FLAMMABLE and a DANGEROUS FIRE HAZARD. It may also spontaneously explode in air. Use dry sand or dry chemical extinguishing agents to fight Chromium <i>powder</i> fires. POISONOUS GASES ARE PRODUCED IN FIRE. CONTAINERS MAY EXPLODE IN FIRE. DO NOT get water inside container.	Chromium may react violently or explosively with AMMONIUM NITRATE; CARBON DIOXIDE ATMOSPHERES; BROMINE PENTAFLUORIDE; LITHIUM; NITROGEN OXIDES; and SULFUR DIOXIDE. Chromium is not compatible with OXIDIZING AGENTS (such as PERCHLORATES, PEROXIDES, PERMANGANATES, CHLORATES, NITRATES, CHLORINE, BROMINE and FLUORINE); STRONG BASES (such as SODIUM HYDROXIDE and POTASSIUM HYDROXIDE); STRONG ACIDS (such as HYDROCHLORIC and SULFURIC); and ALKALI METALS (such as SODIUM and POTASSIUM).

SPILL/LEAKS

Isolation Distance:

Spill: 25 meters (75 feet)

Fire: 800 meters (1/2 mile)

Moisten spilled material first or use a HEPA-filter vacuum for clean-up and place into sealed containers for disposal.

Keep **Chromium** *powder* out of confined spaces, such as sewers, because of the possibility of an explosion.

DO NOT wash into sewer.

PHYSICAL PROPERTIES

Odor Threshold:	Odorless
Flash Point:	Noncombustible solid, Flammable <i>powder</i>
Vapor Pressure:	<0 mm Hg at 68°F (20°C) (approximate)
Specific Gravity:	7.2 (water = 1)
Water Solubility:	Insoluble
Boiling Point:	4,788°F (2,642°C)
Melting Point:	3,452°F (1,900°C)
Molecular Weight:	52

EXPOSURE LIMITS

OSHA: 1 mg/m³, 8-hr TWA

NIOSH: 0.5 mg/m³, 8-hr TWA

ACGIH: 0.5 mg/m³, 8-hr TWA

IDLH: 250 mg/m³

The Protective Action Criteria values are:

PAC-1 = 1.5 mg/m³ PAC-3 = 250 mg/m³

PAC-2 = 2.5 mg/m³

PROTECTIVE EQUIPMENT

Gloves:	Nitrile or Natural Rubber
Coveralls:	Tyvek®
Respirator:	>0.5 mg/m ³ - full facepiece APR with High efficiency filters >1.5 mg/m ³ - SCBA

HEALTH EFFECTS

Eyes:	Irritation, burns and possible eye damage
Skin:	Irritation, burns, itching, rash and skin ulcers
Inhalation:	Nose and throat irritation with coughing and wheezing Headache, fever and chills

FIRST AID AND DECONTAMINATION

Remove the person from exposure.
Flush eyes with large amounts of water for at least 30 minutes. Remove contact lenses if worn. Seek medical attention.
Quickly remove contaminated clothing and wash contaminated skin with large amounts of soap and water.
Begin artificial respiration if breathing has stopped and CPR if necessary.
Transfer promptly to a medical facility.

Skin exposure can occur during direct handling of hexavalent chromium-containing solutions, coatings, and cements.

Steps OSHA has taken to protect employees from health hazards caused by hexavalent chromium

The new OSHA workplace standard requires employers to:

- limit eight-hour time-weighted average hexavalent chromium exposure in the workplace to 5 micrograms or less per cubic meter of air.
- perform periodic monitoring at least every 6 months if initial monitoring shows employee exposure at or above the action level (2.5 micrograms per cubic meter of air calculated as an 8-hour time-weighted average).
- provide appropriate personal protective clothing and equipment when there is likely to be a hazard present from skin or eye contact.
- implement good personal hygiene and house-keeping practices to prevent hexavalent chromium exposure.
- prohibit employee rotation as a method to achieve compliance with the exposure limit (PEL).
- provide respiratory protection as specified in the standard.
- make available medical examinations to employees within 30 days of initial assignment, annually, to those exposed in an emergency situation, to those who experience signs or symptoms of adverse health effects associated with hexavalent chromium exposure, to those who are or may be exposed at or above the action level for 30 or more days a year, and at termination of employment.

For more complete information:



U.S. Department of Labor

www.osha.gov

(800) 321-OSHA

DSG 7/2006

ToxFAQs™ Internet address is <http://www.atsdr.cdc.gov/toxfaq.html>

Skin contact with certain chromium(VI) compounds can cause skin ulcers. Some people are extremely sensitive to chromium(VI) or chromium(III). Allergic reactions consisting of severe redness and swelling of the skin have been noted.

How likely is chromium to cause cancer?

The Department of Health and Human Services (DHHS), the International Agency for Research on Cancer (IARC), and the EPA have determined that chromium(VI) compounds are known human carcinogens. In workers, inhalation of chromium(VI) has been shown to cause lung cancer. Chromium(VI) also causes lung cancer in animals. An increase in stomach tumors was observed in humans and animals exposed to chromium(VI) in drinking water.

How can chromium affect children?

It is likely that health effects seen in children exposed to high amounts of chromium will be similar to the effects seen in adults.

We do not know if exposure to chromium will result in birth defects or other developmental effects in people. Some developmental effects have been observed in animals exposed to chromium(VI).

How can families reduce the risks of exposure to chromium?

- ☐ Children should avoid playing in soils near uncontrolled hazardous waste sites where chromium may have been discarded.
- ☐ Chromium is a component of tobacco smoke. Avoid smoking in enclosed spaces like inside the home or car in order to limit exposure to children and other family members.
- ☐ Although chromium(III) is an essential nutrient, you should avoid excessive use of dietary supplements containing chromium.

Is there a medical test to determine whether I've been exposed to chromium?

Since chromium(III) is an essential element and naturally occurs in food, there will always be some level of chromium in your body. Chromium can be measured in hair, urine, and blood.

Higher than normal levels of chromium in blood or urine may indicate that a person has been exposed to chromium. However, increases in blood and urine chromium levels cannot be used to predict the kind of health effects that might develop from that exposure.

Has the federal government made recommendations to protect human health?

The EPA has determined that exposure to chromium in drinking water at concentrations of 1 mg/L for up to 10 days is not expected to cause any adverse effects in a child.

The FDA has determined that the chromium concentration in bottled drinking water should not exceed 1 mg/L.

The Occupational Health and Safety Administration (OSHA) has limited workers' exposure to an average of 0.005 mg/m³ chromium(VI), 0.5 mg/m³ chromium(III), and 1.0 mg/m³ chromium(0) for an 8-hour workday, 40-hour workweek.

References

Agency for Toxic Substances and Disease Registry (ATSDR). 2008. Toxicological Profile for Chromium (Draft for Public Comment). Atlanta, GA: U.S. Department of Public Health and Human Services, Public Health Service.

Where can I get more information? For more information, contact the Agency for Toxic Substances and Disease Registry, Division of Toxicology and Environmental Medicine, 1600 Clifton Road NE, Mailstop F-32, Atlanta, GA 30333. Phone: 1-800-232-4636, FAX: 770-488-4178. ToxFAQs Internet address via WWW is <http://www.atsdr.cdc.gov/toxfaq.html>. ATSDR can tell you where to find occupational and environmental health clinics. Their specialists can recognize, evaluate, and treat illnesses resulting from exposure to hazardous substances. You can also contact your community or state health or environmental quality department if you have any more questions or concerns.



APPENDIX C

CAP/LINER REFERENCE INFORMATION AND SPECIFICATIONS

**[Reference: Remedial Action Report dated February 1998;
EnviroSciences, Inc.]**



BLACK & VEATCH

601 Walnut Street, Suite 850W, Philadelphia, Pennsylvania 19106-3307, Tel. (215) 928-0700, Fax. (215) 928-1780

AlliedSignal Inc.
Ryerson Steel Site

B&V Project 34941.100
June 5, 1997

Mr. E. J. Walerko
101 Columbia Road
P. O. Box 2105
Morristown, New Jersey 07962-1057

Subject: Engineering Certification of Geosynthetic Design

Dear Emil,

In accordance with a request from Mark London (ESI Inc.), we have drafted a certification statement regarding the engineering design of the geosynthetic components of the proposed cap system for the above referenced project. We understand Mark wishes to include this statement in the final Remedial Action Workplan submission to be made to NJDEP. Please review the paragraph below and respond if you have comments.

Certification

"Black & Veatch has designed the geosynthetic components of the cap system proposed for construction at the Ryerson Steel Site in accordance with industry standard design methodology. The geosynthetic cap system consists of, from bottom to top, a heavy duty protective non-woven geotextile, a 40 mil typical linear low density polyethylene (LLDPE) and a geosynthetic drainage net with a nonwoven geotextile heatbonded to each side.

Based upon our knowledge of the site, we certify that the proposed geosynthetic cap system, if installed under strict engineering control specified in the project specifications, will function in an appropriate manner by providing a physical barrier between the site subsurface contaminants and future site users. "

Upon completion of cap material installation, we will provide a similar certification regarding construction installation. At that time, warranties will also be available from the geomembrane manufacturer and installer. Please call me if I can be of further assistance.

Sincerely,
BLACK & VEATCH

David B. Walsh
David B. Walsh, P.E.
Project Engineer

cc: Mark London
Jim Wong, John Ponton

WAIST

NSF 54 - 1993

FLEXIBLE MEMBRANE LINERS

NSF *International* Standard

NSF 54 - 1993



TABLE 11. MATERIALS PROPERTIES
VERY LOW DENSITY POLYETHYLENE (VLDPE)

Property	Test Method	20	30	40	60
Thickness, mils minimum avg	ASTM D751 (as modified in Annex A)	20	30	40	60
Thickness, mils lowest individual	ASTM D751 (as modified in Annex A)	18	27	38	54
Minimum Tensile Properties	ASTM D638 (as modified in Annex A)				
Tensile Strength @ break lbs/in (lbs/sq in)		84	96	128	184
Elongation @ break ²⁰ percent		825	825	625	825
2% Secant Modulus (max) lbs/sq in	ASTM D638	35000	35000	35000	35000
Tear Resistance lbs (lbs/in)	ASTM D1004	8	12	16	24
Low Temp Impact - deg C	ASTM D748	-60	-60	-60	-60
Dimensional Stability percent chg	ASTM D1204 (as modified in Annex A)	±3	±3	±3	±3
Puncture lbs (lbs/in)	FTMS 101 Method 2065	28	38	52	78
Carbon Black Content Percent Allowable Range	ASTM D1803	2-3	2-3	2-3	2-3
Carbon Black Dispersion Acceptable Levels	ASTM D3015 (as modified in Annex A)			A1,A2,B1	
Factory Seen Requirements ²⁰					
Peel Strength lbs strength and lb or inches of elongation	ASTM D4437 (as modified in Annex A)	20	30	40	60
		10	10	10	10
Shear Strength lbs strength and lb or inches of elongation	ASTM D4437 (as modified in Annex A)	22	33	44	66
		14	14	14	14

MINIMUM PROPERTIES FOR STANDARD SMOOTH VFPE GEOMEMBRANES: GSE ULTRAFLEX®

Property	Test Method	30 (0.75)	40 (1.0)	60 (1.5)	80 (2.0)	100 (2.5)
minimum thickness [mil]	ASTM D 751,	27	36	54	72	90
average thickness [mil]	D 1593 or D 5199	30	40	60	80	100
density [g/cc]	ASTM D 792 (B) or D 1505	0.920	0.920	0.920	0.920	0.920
carbon black content [%]	ASTM D 1603	2.0-3.0	2.0-3.0	2.0-3.0	2.0-3.0	2.0-3.0
carbon black dispersion	ASTM D 3015	A1, A2, B1	A1, A2, B1	A1, A2, B1	A1, A2, B1	A1, A2, B1
<i>Tensile Properties:</i> (each direction)	ASTM D 638 Type IV, 2 ipm NSF 54 modified					
tensile strength @ break [psi]		122	160	243	324	405
elongation @ break [%]	(2.5" gauge length)	780	800	800	800	800
tear resistance [lb.]	ASTM D 1004	18	24	36	48	60
puncture resistance [lb.]	FTMS 101 Method 2065	40	55	80	110	135
ESCR [hours]	ASTM D 1693, B	1500	1500	1500	1500	1500
dimensional stability [% change]	ASTM D 1204 (1 hr. @ 100 °C)	± 2	± 2	± 2	± 2	± 2

* GSE utilizes test equipment and procedures which enable effective and economical confirmation that the product will conform to specifications based on the noted procedures. All procedures and values are subject to change without prior notification.

* Flat cast films can achieve, when necessary, ± 5% of nominal thickness except for ≤ 60 mil; co-extruded films can achieve a range of -10% to +15% of nominal thickness. Specifications with more restrictive tolerances should be printed accordingly.

DURA SEAL® LL GEOMEMBRANE SPECIFICATIONS

40 mil (1.0 mm)

National Seal Company's DURA SEAL LL geomembranes are produced from virgin, first quality, high molecular weight resins and are manufactured specifically for containment in hydraulic structures. DURA SEAL LL geomembranes have been formulated to be resistant to chemicals, ultraviolet degradation, as well as leaching additives.

Refer to NSC's Manufacturing Quality Control Manual to determine test methods and frequencies used as a part of NSC's quality control program.

RESIN PROPERTIES	METHOD	UNITS	MINIMUM ¹	TYPICAL
Melt Flow Index ²	ASTM D 1238	g/10 min	1.0	0.80
Resin Density ²	ASTM D 1505	g/cm ³	0.92	0.917
SHEET PROPERTIES	METHOD	UNITS	MINIMUM ¹	TYPICAL
Thickness	ASTM D 5199			
Average		mil	40.0	41.5
Individual (15' & 30.5')		mil	38.0	40.3
Individual (23')		mil	38.0	40.0
Density ²	ASTM D 1505	g/cm ³	0.935	0.928
Carbon Black Content	ASTM D 4218	percent	2.0	2.3
Carbon Black Dispersion	ASTM D 5596	rating	A1, A2, B1	A1
Tensile Properties	ASTM D 638			
100% Secant Modulus		psi	1500	1570
		ppi	60	65
Stress at Break		psi	3300	3650
		ppi	162	234
Strain at Break	2.0" gage or extensometer	percent	850	1015
	2.5" gage length (NSF)	percent	880	812
Dimensional Stability ²	ASTM D 1204, NSF mod.	percent	3.0	1.1
Tear Resistance	ASTM D 1004	ppi	630	725
		lbs	25	30
Puncture Resistance	ASTM D 4833	ppi	1800	2145
		lbs	72	89

¹ This value represents the minimum acceptable test value for a roll as tested according to NSC's Manufacturing Quality Control Manual. Individual test specimen values are not addressed in this specification except thickness.

² Indicates Maximum Average Roll Value

DURA SEAL® LL GEOMEMBRANE **PHYSICAL PROPERTIES**

40 mil (1.0 mm)

SHEET PROPERTIES	METHOD	UNITS	MINIMUM ¹	TYPICAL
Puncture Resistance	FTMS 101C, Method 2065	ppi lbs	1400 58	1830 78

SEAM PROPERTIES	METHOD	UNITS	MINIMUM ¹	TYPICAL
Shear Strength	ASTM D 4437, NSF mod.	psi ppi	1500 60	1700 71
Peel Strength (hot wedge fusion)	ASTM D 4437, NSF mod.	psi ppi	1325 53	1570 65
Peel Strength (fillet extrusion)	ASTM D 4437, NSF mod.	psi ppi	1135 45	1450 60

Seam testing is the responsibility of the installer and/or CQA personnel.

STANDARD ROLL WIDTHS

15 FT. - 23 FT. - 30.5 FT.

The information contained herein has been compiled by National Seal Company and is, to the best of our knowledge, true and accurate. All suggestions and recommendations are offered without guarantee. Final determination of suitability for use based on any information provided, is the sole responsibility of the user. There is no implied or expressed warranty of merchantability or fitness of the product for the contemplated use. NSC reserves the right to update the information contained herein in accordance with technological advances in the material properties.

4LL-0895



PRODUCT INFORMATION

PERMALON® PLY X-210®

- High density, cross-laminated polyethylene resists punctures and tears.
- UV stabilized to withstand prolonged exposure to sunlight.
- Ply X-210 is not prone to environmental stress-cracking (ESC) so it can endure repeated thermal expansion & contraction cycles.
- Meets ASTM standard D-3083 Soil Burial test performance requirements.

PHYSICAL PROPERTIES AND TYPICAL VALUES			
PROPERTY	ASTM TEST METHOD	US VALUE	METRIC VALUE
THICKNESS	D-4801	20 MIL	.50 MM
WEIGHT	D-3776	68 LB/1000 FT ² 9.9 OZ/YD ²	33 KG/100 M ² 335 GW/M ²
TENSILE STRENGTH	MD D-882	66 LBF	294 N
	PSI	3660 PSI	25.2 MPA
	TD	58 LBF	258 N
	PSI	3170 PSI	21.9 MPA
TENSILE ELONGATION	MD D-882	700 %	700 %
	TD	400 %	400 %
TONGUE TEAR	MD D-751B	37.5 LBF	167 N
	TD	31.5 LBF	140 N
PPT RESISTANCE	MD D-2582	48.2 LBF	214 N
	TD	44.3 LBF	197 N
TRAPEZOIDAL TEAR	MD D-4533	62 LBF	276 N
	TD	77.3 LBF	344 N
DART IMPACT STRENGTH	D-1709	3.01 LBS	1.36 KG
PUNCTURE RESISTANCE	D-4833	42.4 LBS	189 N
COLD IMPACT STRENGTH	D-1709MOD	-80°F	-60°C
CARBON BLACK CONTENT	D-1603	>2.0 %	>2.0 %

The information provided herein is based upon data believed to be reliable. All testing is performed in accordance with ASTM standards and procedures. All values are typical and nominal and do not represent either minimum or maximum performance of the product. Although the information is accurate to the best of our knowledge and belief, no representation of warranty or guarantee is made as to the suitability or completeness of such information. Likewise, no representation of warranty or guarantee, express or implied, of merchantability, fitness or otherwise, is made as to product application for a particular use.

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REEF INDUSTRIES, INC.

Since 1957

P.O. Box 750250

Houston

Texas 77275-0250

713/507-4200

713/507-4205

**Geomembrane Physical Properties
Ryerson Steel Site Cap**

		Units	Dura Seal LL	Dura Seal HD	PLY X-210	GSE HD	GSE UltraFlex
Density		g/cm3 gm/m2	0.935	0.94	0.66 335	0.94	0.92
Carbon Black Content		%	2	2	2	2-3	2-3
Tensile Strength at Yield		ppl psi		88 2200		86	
Tensile Strength at Break	MD	psi	3800	3800	3650	162	160
	TD	ppl	152	152	3170		
Elongation at yield		%		13		13	
Strain at Break	MD	2" gage - %	850	700	700	560	800
	TD	2.5" gage - %	680	560	400		
Dimensional Stability		%	3	2		2	2
Tear Resistance	MD	ppl lbs	630 25	750 30	744	30	24
	TD	ppl			827.6		
Puncture Resistance		ppl	1700	1800			
		lbs	68	72	42.4	52	55
ESCR		hours		200		1500	1500

40 mil
LLDPE



Peenlon

40 mil
LLDPE

NONWOVEN GEOTEXTILES - ENGLISH VALUES

PROPERTY TEST METHOD UNITS VALUE 311 351 401 451 501 601 701 801 1001 1201 1501

MECHANICAL

Grab Tensile Strength	ASTM D-4632	lbs	TYPICAL	100	105	115	135	155	170	205	230	275	340	425
			MARV	80	90	100	120	135	150	180	200	250	300	380
Grab Elongation	ASTM D-4632	%	TYPICAL	55	56	56	56	56	56	60	80	60	60	65
			MARV	45	50	50	50	50	50	50	50	50	50	50
Puncture Strength	ASTM D-4833	lbs	TYPICAL	65	70	80	90	105	120	135	155	185	220	290
			MARV	50	55	65	70	85	95	110	130	160	180	240
Mullen Burst	ASTM D-3786	psi	TYPICAL	220	240	265	290	325	365	425	475	590	680	950
			MARV	165	185	225	240	275	325	350	400	510	600	800
Trapezoidal Tear	ASTM D-4533	lbs	TYPICAL	40	45	55	60	68	70	88	98	115	130	165
			MARV	30	35	45	50	57	60	75	85	100	115	145

HYDRAULIC

Apparent Opening Size (AOS)	ASTM D-4751	US Sieve	TYPICAL	100	100	100	100	100	100	100	100	140	140	140
			MARV	70	70	70	70	70	70	70	80	100	100	100
Permittivity	ASTM D-4491	sec ⁻¹	TYPICAL	2.50	2.50	2.50	1.90	1.80	1.70	1.80	1.90	1.60	1.50	1.00
			MARV	2.00	2.00	2.00	1.50	1.40	1.30	1.50	1.50	1.20	1.00	0.70
Permeability	ASTM D-4491	cm/sec	TYPICAL	0.28	0.31	0.34	0.29	0.29	0.32	0.40	0.48	0.40	0.43	0.39
			MARV	0.22	0.25	0.22	0.22	0.23	0.24	0.34	0.38	0.30	0.29	0.27
Water Flow Rate	ASTM D-4491	gpm/ft ²	TYPICAL	130	130	160	140	130	130	130	130	100	90	65
			MARV	110	110	140	120	115	110	110	110	85	75	50

ENDURANCE

UV Resistance	ASTM D-4355	% Retained @ 500 hrs	MARV	70	70	70	70	70	70	70	70	70	70	70
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STANDARD PACKAGING

Roll Width	Measured	feet	TYPICAL	12.5/15.0	12.5/15.0	12.5/15.0	12.5/15.0	12.5/15.0	12.5/15.0	12.5/15.0	15.0	15.0	15.0	15.0
Roll Length	Measured	feet	TYPICAL	360	360	360	360	360	360	300	300	300	300	300
Roll Area	Calculated	yd ²	TYPICAL	500/600	500/600	500/600	500/600	500/600	416.67/500	416.67/500	500	500	500	500

NOTES

▲ Values reported in weaker principle direction

▲ MARV™ indicates minimum average roll value

calculated as the typical minus two standard deviations
Statistically, it yields a 97.7% confidence that any sample taken during quality assurance testing will exceed the value reported



SYNTHETIC INDUSTRIES

Chattanooga, Tennessee, USA
(423) 899-0444 ▲ (423) 899-7619 (Fax)

TENDRAIN 70 - 2 **DOUBLE SIDED GEOCOMPOSITE** **GEOTEXTILE - GEONET - GEOTEXTILE**

The drainage geocomposite is comprised of a tri-planer geonet structure consisting of thick supporting ribs with diagonally placed top and bottom ribs and with a thermally bonded, non-woven geotextile on both sides. The product is be capable of providing high flow rates in a soil environment under high normal loads and will have properties conforming with the values and test methods listed below.

PROPERTIES	TEST METHOD	UNIT	VALUE	Qualifier
------------	-------------	------	-------	-----------

PROPERTIES OF GEONET CORE				
Tensile Strength (MD)	ASTM D4595	lb/ft (kN/m)	900 (13.1)	a, Note 1
Compression Behavior	ASTM D1621	%	75	a, Note 2
% Retained @ 10,000 psf		%	65	a, Note 2
25,000 psf		%	50	a, Note 2
40,000 psf				
Resin Density	ASTM D1505	g/cm ³	0.940	a
Resin Melt Index	ASTM D1238	g/10 min.	1.0	d
Carbon Black Content	ASTM D4218	%	2.0	a
Thickness	ASTM D5199	mils (mm)	275 (7.0)	c, Note 3

PROPERTIES OF GEOTEXTILE				
AOS	ASTM D4751	US Sieve (mm)	70 (0.21)	b
Permittivity	ASTM D4491	sec ⁻¹	1.6	b
Permeability	ASTM D4481	cm/sec	0.2	b
Grab Tensile Strength	ASTM D4632	lbs (kN)	150 (0.67)	b

PROPERTIES OF GEOCOMPOSITE Geotextile - Geonet - Geotextile				
Tensile Strength (MD)	ASTM D4596	lb/ft (kN/m)	2380 (34.7)	a
Thickness	ASTM D5199	mils (mm)	325 (8.9)	a
Ply Adhesion	ASTM D413	lbs/in (g/cm)	1 (178) Polypropylene Geotextile	c, Note 4

HYDRAULIC BEHAVIOR IN SOIL

Flow Rate/Unit Width (gal./min./ft.) ASTM D 4718

Hydraulic Gradient/Load:	1,000 psf	8,000 psf	15,000 psf	25,000 psf	Notes 5,6
i = 0.10	1.9	1.9	1.0	0.5	Notes 5,6
i = 0.20	2.7	2.8	1.8	0.7	Notes 5,6
i = 0.33	3.6	3.3	2.3	1.0	Notes 5,6
i = 0.50	4.7	4.2	3.0	1.2	Notes 5,6
i = 0.75	5.8	5.3	3.8	1.6	Notes 5,6
i = 1.00	6.2	6.0	4.1	1.7	Notes 5,6

Qualifiers: a = Typical Value b = Minimum Average Roll Value
 c = Minimum Value d = Maximum Value

NOTES:

1. Tensile Properties tested by manufacturer every 40,000 square feet of product as per ASTM D4595 with a specimen width of 8.0 in. and a cross-head speed of 0.4 in./min. in machine direction.
2. Compression behavior tested by manufacturer every 40,000 square feet of product as per ASTM

Tenax Corporation
 4800 East Monument Street
 Baltimore, Maryland 21205
 (800)356-8495

081898

TEX-NET SPECIFICATIONS

GEOCOMPOSITE PROPERTIES

			TN3002/1120	TN3002/1125
Transmissivity ¹ (15,000 psf)	ASTM D 4716	m ² /sec	5 x 10 ⁻⁵ 1.5x10 ⁻⁴ (typ.)	3 x 10 ⁻⁵ 1 x 10 ⁻⁴ (typ.)
Ply Adhesion	ASTM D 413 or F 904	lb/in	2.0	2.0
Tensile Strength (MD)	ASTM D 4632	lbs	535	580

COMPONENT PROPERTIES³

Density	ASTM D 1505	g/cm ³	0.94
Carbon Black Content	ASTM D 4218 or ASTM D 1603	%	2.0
Thickness	ASTM D 5199	inches	0.200
Mass Per Unit Area	ASTM D 5261	lbs/ft ²	0.162
Transmissivity ¹	ASTM D 4716	m ² /sec	1 x 10 ⁻³ @15,000 psf
Tensile Strength	ASTM D 5035	lbs/in	45

			1120	1125
Fabric Weight	ASTM D 5261	oz/yd ²	5.7	7.1
Thickness	ASTM D 5199	mils	75	95
Grab Strength	ASTM D 4632	lbs	160	210
Water Flow Rate	ASTM D 4491	gpm/ft ²	130	110
AOS	ASTM D 4751	Sieve Size mm	70 0.210	70 0.210

1. Measured using water @ 20°C (68°F) with a gradient of one, between two steel plates, after one hour. Value may vary, based on dimensions of the transmissivity specimen and specific laboratory.
2. These values represent minimum acceptable test values for a roll as tested according to NSC/FSL's Manufacturing Quality Control Manual. Individual

- test specimen values are not addressed in this specification.
3. Component properties are tested prior to the lamination process. They cannot be tested on the final product.

1/97 CN



1245 Corporate Blvd. • Suite 300 • Aurora, IL 60504
 NSC (630) 898-1161 • (300) 323-3820 • Fax: (630) 898-3461 / FSL (300) 346-9107 • Fax: (630) 898-1179



525 RIVER ROAD, EDGEWATER, NEW JERSEY 07020
PHONE 201-945-9555 • FAX 201-945-8333

December 17, 1997

VIA: FAX AND MAIL

Mr. Lou March
March Associates
1599 Hamburg Turnpike
Wayne, New Jersey 07470

RE: 440 COMMONS
JERSEY CITY, NEW JERSEY

Dear Lou:

I understand that due to the weather condition the ability to pour a proper slab is hindered and it is likely to heave and/or spauld. For this reason you should complete installation of the foundation and preparation of the slab subbase and hold off with the installation of the slab. We will not direct you to continue until the conditions improve or the building is enclosed and temporary heat can be utilized.

Also, as you know the site has been capped with a geomembrane which is located approximately 3 feet below the slab subgrade. No excavation for any reason should take place and we should be extremely careful while we continue with the construction of the structure (masonry, steel, roofing, etc.)

Should you have any questions or require any additional information pertaining to this matter, please feel free to call me.

Sincerely,

Heller Jersey City, L.L.C.
By: Heller Management Corp.

A handwritten signature in black ink, appearing to read 'R. LaBarbiera', is written over the printed name.

Richard A. LaBarbiera, P.E.
Project Engineer

RAL/es

cc: Scott D. Heller, Esq.
Keith Michels
Mark London/Enviro Sciences ✓

facsimile

TRANSMITTAL

to: Mark London
fax #: 201 398-8037
re: REMEDIAL ACTION REPORT; RYERSON/HOME DEPOT
date: December 11, 1997
pages: 5 page(s) total, including this cover sheet

Mark,

As requested, I have prepared a write-up on the geomembrane component of construction for inclusion in your Remedial Action Report. I hope it meets your needs. I have also prepared a draft construction certification letter for your report. I will issue a final certification letter upon completion of construction.

Allied are also receiving review copies of these documents. If Allied's review results in changes, I will inform you as needed.

Please let me know if I can be of further assistance.

tdwalsh

cc: E. Walerko
J. Wong

From the desk of...

David B. Walsh, P.E.
Project Manager
Black & Veatch Special Projects Corp
601 Walnut Street
Philadelphia, Pennsylvania 19106-3307

tel: 215 928-2225
fax: 215 928-1780

**Remedial Action Report
for
Ryerson Steel/Home Depot
Route 440, Jersey City, New Jersey.**

The following paragraph's have been prepared at the request of Mark London of Enviro-Science, Inc. for inclusion in the Remedial Action Report (RAR) for the above reference site. These paragraphs describe the installation, seaming and quality assurance/quality control (QA/QC) programs employed during construction of the geomembrane component of the remedial cap construction.

Geomembrane Installation

A 40-mil Linear Low Density Polyethylene (LLDPE) geomembrane was deployed across the entire site. The geomembrane was placed on a carefully prepared subgrade, consisting of a non-woven geotextile fabric resting on existing smooth asphalt, smooth concrete or select soil, with a maximum particle size no larger than 2 inches. Following subgrade preparation, and immediately prior to geomembrane deployment, the receiving subgrade was inspected by the installation contractor and approved for receiving geomembrane materials. As the geomembrane sheets were rolled out across the subgrade they were carefully inspected for visible damage resulting from transportation or storage.

Geomembrane Seaming

The geomembrane rolls used on the project were approximately 23 feet in width and 750 feet in length. Rolls were placed with adjacent sheets overlapping a minimum of 3 inch. At each overlap, adjacent sheets were welded together using either extrusion or fusion welding methods. Extrusion welding was only performed in areas where fusion welding equipment could not operate. Prior to welding, each overlap was inspected to verify that the materials were clean, dry and in suitable condition for welding to proceed. In addition, prior to performing production seaming, the contractor performed test welds to verify welding procedures and methods were appropriate.

Extrusion seams were made by overlapping adjacent sheets a minimum of 3 inches and extruding a ribbon of hot fusion-joining resin no less than three-quarter inch in width between the overlapped sheets or over the seams between the overlapped sheets.

Fusion field seams were made by overlapping adjacent sheets a minimum of 3 inches and forming a double welded seam separated by an air space approximately 0.375 inch in width. Fusion welded seams were produced by a double hot shoe welder capable of maintaining a recordable temperature determined by onsite conditions which did not vary more than 10°C from the target temperature.

Geomembrane QA/QC Weld Testing Program

All geomembrane overlaps were subjected to the quality control and quality assurance program described below.

The Quality Control (QC) program performed by the contractor included both non-destructive and destructive testing of geomembrane seams and was performed to confirm geomembrane seam quality. A Quality Assurance (QA) program was conducted by the Engineer to confirm results of the contractor's QC program and verify conformance with the project specifications.

Non-destructive testing was performed on 100% of geomembrane seams. Destructive testing was performed on geomembrane seams at a frequency of one test per 400 linear feet of seam. Details of both non-destructive and destructive testing programs are provided below.

Non-Destructive Seam Testing Program

One of the following three methods was used by the contractor in complying with the non-destructive testing requirements of the project.

Non-destructive Vacuum Testing. Continuous vacuum box testing was performed on extrusion welded seams and repairs. The vacuum box assembly consisted of a rigid housing, a transparent viewing window, a soft neoprene gasket, a port hole or valve assembly, and a gauge to indicate chamber pressure. A soapy solution was applied to the geomembrane seam over an area of approximately 12 inches by 48 inches. For a period of not less than 30 seconds, the seam was examined by viewing through the transparent window. If no bubbles appeared, the seam passed this non-destructive test. If bubbles did appear, the area failed the test and was repaired and retested until satisfactory seams were demonstrated.

Non-Destructive Spark Testing. Spark testing was performed on extrusion welded seams whose configuration would not permit testing by the vacuum box method. Spark testing was performed by embedding a copper wire within the bead of extrudate being applied to the overlapping geomembrane materials. Upon completion of the extrusion welding process, an electrical source was applied to the exposed end of the embedded copper wire and the continuity of the weld was tested by passing an electrical "wand" directly above the weld. If the weld was not continuous, a spark is observed to jump between the embedded wire and the electrical "wand". When observed the discontinuity was repaired and retested until satisfactory seams are demonstrated.

Non-destructive Air Pressure Testing. Air pressure testing was performed on all double fusion welded seams. All 40 mil double fusion seams were tested at 30 psi over the maximum uninterrupted panel seam length for 5 minutes. If the pressure drop in the seam exceeded 3 p.s.i., or if the pressure failed to stabilize, the leak was located, repaired and retested until satisfactory seams were demonstrated.

Destructive Seam Testing Program

Destructive Testing. Destructive testing was performed on samples of production seams to confirm seam quality. A sample coupon of production seams approximately 36 inches long by 12 inches wide, was taken every 400 feet of production seam. The area from which the sample was removed was repaired using an extrusion welded patch and the resulting seam was non-destructively tested.

From the coupon, a sample was sent to the contractor's quality control laboratory for shear and peel testing. A total of five shear and five peel tests are performed on each coupon. The minimum seam strength values required for all samples obtained from fusion and extrusion welded seams was 40 pounds per inch for seams tested in peel, and 44 pounds per inch for seams tested in shear. Passing destructive test results were obtained for all seams tested.

APPENDIX D

DEED NOTICES

APPENDIX D-1

Deed Notice for Main Site (Block 26201, Lot 1.01)



20150209010011240 1/29
02/09/2015 10:14:20 AM DEED
Bk: 9021 Pg: 723
Pamela E. Gardner
Hudson County, Register of Deeds
Receipt No. 98477B

DEED NOTICE

IN ACCORDANCE WITH N.J.S.A. 58:10B-13, THIS DOCUMENT IS TO BE RECORDED IN THE SAME MANNER AS ARE DEEDS AND OTHER INTERESTS IN REAL PROPERTY.

Prepared by:

[Signature]

[Print name below signature]

Recorded by:

[Signature, Officer of County Recording Office]

[Print name below signature]



20150507010037620 1/29
05/07/2015 01:32:36 PM DEED
Bk: 9037 Pg: 7
Pamela E. Gardner
Hudson County, Register of Deeds
Receipt No. 101355B

DEED NOTICE

This Deed Notice is made as of the ____ day of _____, 2015, by Jersey City Fields, L.L.C., 7412 Stonegate Blvd., Parkland, Florida 33076 (together with its successors and assigns, collectively "Owner").

1. THE PROPERTY. Jersey City Fields, L.L.C. is the owner in fee simple of certain real property designated as Block 26101, Lot 1.01, on the tax map of the City of Jersey City, Hudson County; the New Jersey Department of Environmental Protection Program (NJDEP) Interest Number (Preferred ID) for the contaminated site which includes this property is 008809; and the property is more particularly described in Exhibit A, which is attached hereto and made a part hereof (the "Property").

2. REMEDIATION.

i. The NJDEP has approved this Deed Notice as an institutional control for the Property, which is part of the remediation of the Property.

ii. N.J.A.C. 7:26C-7 requires the Owner, among other persons, to obtain a soil remedial action permit for the soil remedial action at the Property. That permit will contain the monitoring, maintenance and biennial certification requirements that apply to the Property.

3. SOIL CONTAMINATION. G. Heller Enterprises, Inc., prior owner of the Property, in cooperation with Honeywell International Inc (Honeywell), remediated contaminated soil at the Property, such that soil contamination remains in certain areas of the Property in concentrations that do not allow for the unrestricted use of the Property; this soil contamination is described, including the type, concentration and specific location of such contaminants, in Exhibit B, which is attached hereto and made a part hereof. The remedial actions were documented in a Remedial

This Deed Notice is being re-recorded to replace Exhibit B1-A.

24 pages - 333 - 78

Action Report dated February 1998, and the New Jersey Department of Environmental Protection issued a No Further Action Letter for soils dated March 27, 1998. As a result, there is a statutory requirement for this Deed Notice and engineering controls in accordance with N.J.S.A. 58:10B-13. (NOTE: An institutional control for groundwater referred to as a Classification Exception Area [CEA] was approved by the NJDEP on February 16, 2012; CEA information can be obtained from the NJDEP via Open Public Records Act records request.)

4. CONSIDERATION. In accordance with the remedial action for the Property, and in consideration of the terms and conditions of that remedial action, and other good and valuable consideration, Owner has agreed to subject the Property to certain statutory and regulatory requirements that impose restrictions upon the use of the Property, to restrict certain uses of the Property, and to provide notice to subsequent owners, lessees and operators of the restrictions and the monitoring, maintenance, and biennial certification requirements outlined in this Deed Notice and required by law, as set forth herein.

5A. RESTRICTED AREAS. Due to the presence of contamination remaining at concentrations that do not allow for unrestricted use, the Owner has agreed, as part of the remedial action for the Property, to restrict the use of certain parts of the Property (the "Restricted Areas"); a narrative description of these restrictions is provided in Exhibit C, which is attached hereto and made a part hereof. The Owner has also agreed to maintain a list of these restrictions on site for inspection by governmental officials, operators, tenants, lessees, and contractors and workers intending to conduct invasive work within the Restricted Area.

5B. RESTRICTED LAND USES. The following statutory land use restrictions apply to the Restricted Areas:

i. The Brownfield and Contaminated Site Remediation Act, N.J.S.A. 58:10B-12.g(10), prohibits the conversion of a contaminated site, remediated to non-residential soil remediation standards that require the maintenance of engineering or institutional controls, to a child care facility, or public, private, or charter school without the Department's prior written approval, unless a presumptive remedy is implemented; and

ii. The Brownfield and Contaminated Site Remediation Act, N.J.S.A. 58:10B-12.g(12), prohibits the conversion of a landfill, with gas venting systems and or leachate collection systems, to a single family residence or a child care facility without the Department's prior written approval.

5C. ENGINEERING CONTROLS. Due to the presence and concentration of these contaminants, the Owner has also agreed, as part of the remedial action for the Property, to the placement of certain engineering controls on the Property; a narrative description of these engineering controls is provided in Exhibit C.

5D. WORKER PROTECTION PLAN. Honeywell has prepared a Worker Protection Plan for use by the owner, lessee and/or operators for the protection of workers who may be potentially exposed to chromium-impacted soils or groundwater in conjunction with utility or other ground intrusive work on the Property; the Worker Protection Plan identifies health and

safety requirements for the protection of personnel and contractors who may perform ground intrusive activities (e.g., digging, drilling, excavation) that may disturb existing engineering controls and provides a basis for worker awareness to inform workers of potential hazards associated with chromium-impacted media. The Owner shall make the Worker Protection Plan available to operators, tenants, contractors and/or utility workers intending to conduct invasive work within the Restricted Area to prevent unauthorized disturbance of engineering controls and potential exposure to contaminants.

6A. CHANGE IN OWNERSHIP AND REZONING.

i. The Owner and the subsequent owners and lessees, shall cause all leases, grants, and other written transfers of an interest in the Restricted Areas to contain a provision expressly requiring all holders thereof to take the Property subject to the restrictions contained herein and to comply with all, and not to violate any of the conditions of this Deed Notice. Nothing contained in this Paragraph shall be construed as limiting any obligation of any person to provide any notice required by any law, regulation, or order of any governmental authority.

ii. The Owner and the subsequent owners shall provide written notice to the Department of Environmental Protection on a form provided by the Department and available at www.nj.gov/srp/forms within thirty (30) calendar days after the effective date of any conveyance, grant, gift, or other transfer, in whole or in part, of the owner's interest in the Restricted Area.

iii. The Owner and the subsequent owners shall provide written notice to the Department, on a form available from the Department at www.nj.gov/srp/forms, within thirty (30) calendar days after the owner's petition for or filing of any document initiating a rezoning of the Property to residential.

6B. SUCCESSORS AND ASSIGNS. This Deed Notice shall be binding upon Owner and upon Owner's successors and assigns, and subsequent owners, lessees and operators while each is an owner, lessee, or operator of the Property.

7A. ALTERATIONS, IMPROVEMENTS, AND DISTURBANCES.

i. The Owner and all subsequent owners and lessees shall notify any person, including, without limitation, tenants, employees of tenants, and contractors, intending to conduct invasive work or excavate within the Restricted Areas, of the nature and location of contamination in the Restricted Areas, of the precautions necessary to minimize potential human exposure to contaminants, and, of the Worker Protection Plan that must be followed.

ii. Except as provided in Paragraph 7B, below, no person shall make, or allow to be made, any alteration, improvement, or disturbance in, to, or about the Property which disturbs any engineering control at the Property without first obtaining a soil remedial action permit modification pursuant to N.J.A.C. 7:26C-7. Nothing herein shall constitute a waiver of the obligation of any person to comply with all applicable laws and regulations including,

without limitation, the applicable rules of the Occupational Safety and Health Administration.

iii. Notwithstanding subparagraph 7Aii., above, a soil remedial action permit modification is not required for any alteration, improvement, or disturbance provided that the owner, lessee or operator:

(A) Notifies the Department of Environmental Protection of the activity by calling the DEP Hotline, at 1-877-WARN-DEP or 1-877-927-6337 within twenty-four (24) hours after the beginning of each alteration, improvement, or disturbance; and notifies Honeywell (by calling 855-727-2658) and the Owner at least seventy-two (72) hours before the beginning of each alteration, improvement, or disturbance;

(B) Restores any disturbance of an engineering control to pre-disturbance conditions within sixty (60) calendar days after the initiation of the alteration, improvement or disturbance;

(C) Follows the Worker Protection Plan, and, all applicable worker health and safety laws and regulations during the alteration, improvement, or disturbance, and during the restoration;

(D) Takes appropriate measures so that human exposure to contamination in excess of the remediation standards does not occur; and

(E) Describes, in the next biennial certification the nature of the alteration, improvement, or disturbance, the dates and duration of the alteration, improvement, or disturbance, the name of key individuals and their affiliations conducting the alteration, improvement, or disturbance, a description of the notice the Owner gave to those persons prior to the disturbance.

7B. EMERGENCIES. In the event of an emergency which presents, or may present, an unacceptable risk to the public health and safety, or to the environment, or immediate environmental concern, see N.J.S.A. 58:10C-2, any person may temporarily breach an engineering control provided that that person complies with each of the following:

i. Immediately notifies the Department of Environmental Protection of the emergency, by calling the DEP Hotline at 1-877-WARNDEP or 1-877-927-6337 and then notifies Honeywell by calling 855-727-2658 and the Owner;

ii. If applicable, hires a Licensed Site Remediation Professional (unless the Restricted Areas includes an unregulated heating oil tank) to respond to the emergency;

iii. Limits both the actual disturbance and the time needed for the disturbance to the minimum reasonably necessary to adequately respond to the emergency;

iv. Implements all measures necessary to limit actual or potential, present or future risk of exposure to humans or the environment to the contamination;

v. Notifies the Department of Environmental Protection when the emergency or immediate environmental concern has ended by calling the DEP Hotline at 1-877-WARNDEP or 1-877-927-6337; and

vi. Restores the engineering control to the pre-emergency conditions as soon as possible, and provides notification to the Department of Environmental Protection within sixty (60) calendar days after completion of the restoration of the engineering control, including: (a) the nature and likely cause of the emergency; (b) the potential discharges of or exposures to contaminants, if any, that may have occurred; (c) the measures that have been taken to mitigate the effects of the emergency on human health and the environment; (d) the measures completed or implemented to restore the engineering control; and (e) the changes to the engineering control or site operation and maintenance plan to prevent reoccurrence of such conditions in the future.

8. TERMINATION OF DEED NOTICE.

i. This Deed Notice may be terminated only upon filing of a Termination of Deed Notice, available at N.J.A.C. 7:26C Appendix C, with the office of the Hudson County Register of Deeds expressly terminating this Deed Notice.

ii. Within thirty (30) calendar days after the filing of a Termination of Deed Notice, the owner of the property shall apply to the Department for termination of the soil remedial action permit pursuant to N.J.A.C. 7:26C-7.

9. ACCESS. The Owner, and the subsequent owners, lessees and operators agree to allow the Department, its agents and representatives access to the Property to inspect and evaluate the continued protectiveness of the remedial action that includes this Deed Notice and to conduct additional remediation to provide for the protection of the public health and safety and of the environment if the subsequent owners, lessees and operators, during their ownership, tenancy, or operation, and the Owner fail to conduct such remediation pursuant to this Deed Notice as required by law. The Owner, and the subsequent owners and lessees, shall also cause all leases, subleases, grants, and other written transfers of an interest in the Restricted Areas to contain a provision expressly requiring that all holders thereof provide such access to the Department.

10. ENFORCEMENT OF VIOLATIONS.

i. This Deed Notice itself is not intended to create any interest in real estate in favor of the Department of Environmental Protection, nor to create a lien against the Property, but merely is intended to provide notice of certain conditions and restrictions on the Property and to reflect the regulatory and statutory obligations imposed as a conditional remedial action for this site.

ii. The restrictions provided herein may be enforceable solely by the Department against any person who violates this Deed Notice. To enforce violations of this Deed Notice, the Department may initiate one or more enforcement actions pursuant to N.J.S.A. 58:10-23.11, and N.J.S.A. 58:10C, and require additional remediation and assess damages pursuant to N.J.S.A. 58:10-23.11, and N.J.S.A. 58:10C.

11. SEVERABILITY. If any court of competent jurisdiction determines that any provision of this Deed Notice requires modification, such provision shall be deemed to have been modified automatically to conform to such requirements. If a court of competent jurisdiction determines that any provision of this Deed Notice is invalid or unenforceable and the provision is of such a nature that it cannot be modified, the provision shall be deemed deleted from this instrument as though the provision had never been included herein. In either case, the remaining provisions of this Deed Notice shall remain in full force and effect.

12A. EXHIBIT A. Exhibit A includes the following maps of the Property and the vicinity:

- i. Exhibit A-1: Vicinity Map - A map that identifies by name the roads, and other important geographical features in the vicinity of the Property;
- ii. Exhibit A-2: Metes and Bounds Description - A tax map of lots and blocks as wells as metes and bounds description of the Property, including reference to tax lot and block numbers for the Property;
- iii. Exhibit A-3: Property Map - A scaled map of the Property, scaled at one inch to 200 feet or less, and if more than one map is submitted, the maps shall be presented as overlays, keyed to a base map; and the Property Map shall include diagrams of major surface topographical features such as buildings, roads, and parking lots.

12B. EXHIBIT B. Exhibit B includes the following descriptions of the Restricted Areas:

- i. Exhibit B-1: Restricted Area Map - A separate map for each restricted area that includes:
 - (A) As-built diagrams of each engineering control, including caps, fences, slurry walls, (and, if any) ground water monitoring wells, extent of the ground water classification exception area, pumping and treatment systems that may be required as part of a ground water engineering control in addition to the deed notice;
 - (B) As-built diagrams of any buildings, roads, parking lots and other structures that function as engineering controls; and
 - (C) Designation of all soil and sediment sample locations within the restricted areas that exceed any soil or sediment standard that are keyed into one of the tables described in the following paragraph.

ii. Exhibit B-2: Restricted Area Data Table - A separate table for each restricted area that includes either (A) or (B) through (F) (Data not available electronically; it is provided on the figures presented as Exhibits B-2A through F):

(A) Only for historic fill extending over the entire site or a portion of the site and for which analytical data are limited or do not exist, a narrative that states that historic fill is present at the site, a description of the fill material (e.g., ash, cinders, brick, dredge material), and a statement that such material may include, but is not limited to, contaminants such as PAHs and metals;

(B) Sample location designation from Restricted Area map (Exhibit B-1) (Locations shown on Exhibit B-2A through F);

(C) Sample elevation based upon mean sea level (Sample elevations are not available based on information provided by historic reports. Sample depth intervals were provided however, the ground surface elevation has changed due to the implemented remedial action and development of the property);

(D) Name and chemical abstract service registry number of each contaminant with a concentration that exceeds the unrestricted use standard (CAS Numbers are provided on Exhibits B-2A through F);

(E) The restricted and unrestricted use standards for each contaminant in the table; and (applicable standards for each contaminant are provided on Exhibits B-2A through F)

(F) The remaining concentration of each contaminant at each sample location at each elevation (concentrations are provided on Exhibits B-2A through F).

12C. EXHIBIT C. Exhibit C includes narrative descriptions of the institutional controls and engineering controls as follows:

i. Exhibit C-1: Deed Notice as Institutional Control: Exhibit C-1 includes a narrative description of the restriction and obligations of this Deed Notice that are in addition to those described above, as follows:

(A) Description and estimated size of the Restricted Areas as described above;

(B) Description of the restrictions on the Property by operation of this Deed Notice; and

(C) The objective of the restrictions.

ii. Exhibit C-2: Asphalt Pavement / Geomembrane Liner Cap: Exhibit C-2 includes a narrative description of the Asphalt Pavement / Geomembrane Liner Cap as follows:

(A) Description of the engineering control;

(B) The objective of the engineering control; and

(C) How the engineering control is intended to function.

iii. Exhibit C-3: Concrete / Geomembrane Liner Cap: Exhibit C-3 includes a narrative description of the Concrete / Geomembrane Liner Cap as follows:

(A) Description of the engineering control;

(B) The objective of the engineering control; and

(C) How the engineering control is intended to function.

iv. Exhibit C-4: Building Concrete Slab / Geomembrane Liner Cap: Exhibit C-4 includes a narrative description of the Building Concrete Slab / Geomembrane Liner Cap as follows:

(A) Description of the engineering control;

(B) The objective of the engineering control; and

(C) How the engineering control is intended to function.

iv. Exhibit C-5: Vegetative / Geomembrane Liner Cap: Exhibit C-5 includes a narrative description of the Vegetative / Geomembrane Liner Cap as follows:

(A) Description of the engineering control;

(B) The objective of the engineering control; and

(C) How the engineering control is intended to function.

v. Exhibit C-6: Asphalt Pavement Cap: Exhibit C-6 includes a narrative description of the Asphalt Pavement Cap as follows:

(A) Description of the engineering control;

(B) The objective of the engineering control; and

(C) How the engineering control is intended to function.

13. SIGNATURES. IN WITNESS WHEREOF, Owner has executed this Deed Notice as of the date first written above.

ATTEST:

Jersey City Fields, LLC

Margaret L Caracate By Stacy Fields

Margaret L Caracate
[Print name and title]

Stacy Fields
[Signature]

Managing Member of Fields Realty,
the Manager of Jersey City Fields,
LLC

STATE OF NEW JERSEY SS.:
COUNTY OF HUDSON

I certify that on 1/14, 2015, [Name of person executing document on behalf of Owner] personally came before me, and this person acknowledged under oath, to my satisfaction, that:

(a) this person is the [secretary/assistant secretary] of Jersey City Fields, LLC, the corporation named in this document;

(b) this person is the attesting witness to the signing of this document by the proper corporate officer who is the [president/vice president] of the corporation;

(c) this document was signed and delivered by the corporation as its voluntary act and was duly authorized;

(d) this person knows the proper seal of the corporation which was affixed to this document; and

(e) this person signed this proof to attest to the truth of these facts.

Kim B. Fields
[Signature]

Kim B. Fields
[Print name and title of attesting witness]

Signed and sworn before me on Jan. 14, 2015

Margaret L Caracate, Notary Public

Margaret L Caracate
[Print name and title]

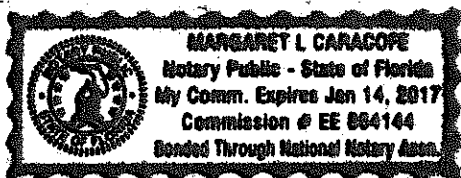


Exhibit A

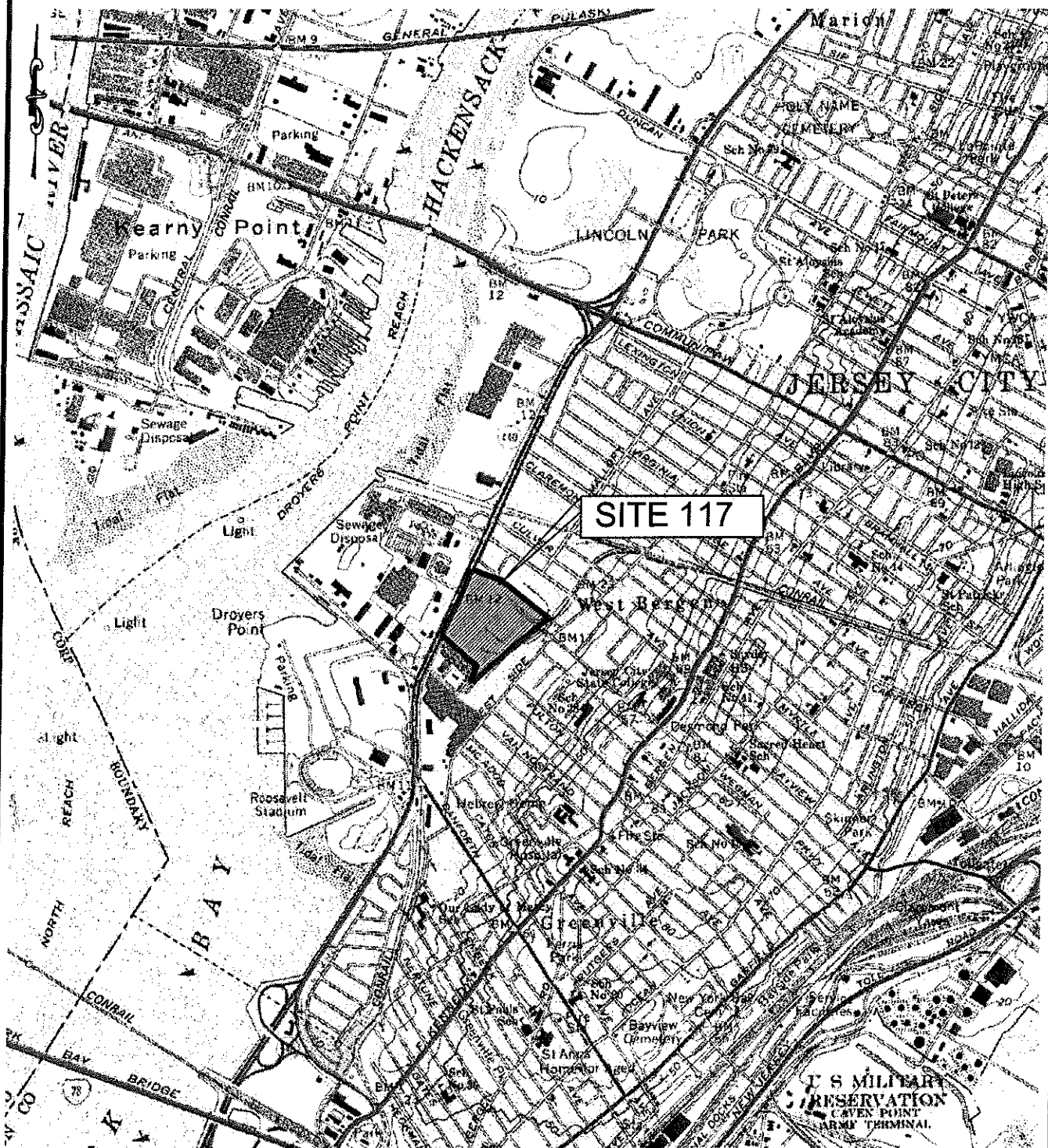
A-1: Vicinity Map

A-2A: Metes and Bounds Description

A-2B: Tax Map of Lots and Blocks

A-3: Property Map

FILE: P:\CADD\HOBBSWELL\JERSEY CITY\SA 5\SITE 117 THE HOME DEPOT\3480050136-6100-ATVM-0000.DWG, DATE: 03/25/2013 11:27:24AM, Layout: 101



SOURCE: USGS QUADRANGLE MAP, 7.5 MIN SERIES
JERSEY CITY, NJ-NY 1967, PHOTO REVISED 1981

NOTE:
REFER TO OTHER EXHIBIT FIGURES FOR DETAILS

0 2000 4000
SCALE IN FEET

AMEC PROJ No.: 3480050361
DRAWING: 3480050136-6100-ATVM-0000

PREPARED/DATE:
STR 12/20/12

CHECKED/DATE:
CMR 12/28/12

amec

ENVIRONMENT & INFRASTRUCTURE
200 AMERICAN METRO BLVD, SUITE 113
HAMILTON, NEW JERSEY 08619

EXHIBIT A-1
VICINITY MAP
DEED NOTICE

BLOCK 26101, LOT 1.01
SA 5 - SITE 117 FORMER RYERSON STEEL
JERSEY CITY, NEW JERSEY

Exhibit A-2A

Metes and Bounds Description

All that certain lot, tract or parcel of land situate, lying and being in the City of Jersey City, in the County of Hudson and the State of New Jersey, designated as Proposed Lot 1.01 as shown on a map entitled "Minor Subdivision Plat for Bayfront Redevelopment, LLC, Lot 1 Block 26101 (Formerly Block 1285.05), City of Jersey City, Hudson County, New Jersey" prepared by Maser Consulting, P.A. dated September 9, 2011, last revised April 2, 2012, being a portion of Lot 1, Block 26101 (former block 1285.05) as shown on the Official Tax Map for the City of Jersey City, and being more particularly bounded and described as follows, to wit:

BEGINNING at the first corner of lands described in a deed from DDR Southeast Jersey City, L.L.C., to Jersey City Fields, LLC, dated September 12, 2008 and recorded in the Hudson County Clerk's Office on September 18, 2008 in deed book 8611, page 257; said corner being located the following two (2) courses from a stone monument in the westerly sideline of West Side Avenue, distant 591.77 feet northerly from the northerly line of Woodlawn Avenue, projected Northwestwardly, as described therein:

- A. N 49° 06' 18" W 313.37 feet; thence-
- B. S 52° 35' 42" W 51.06 feet; to the True Point of **BEGINNING**, and running; thence-

Along the outside line of the aforementioned Lot 1, the following nine (9) courses:

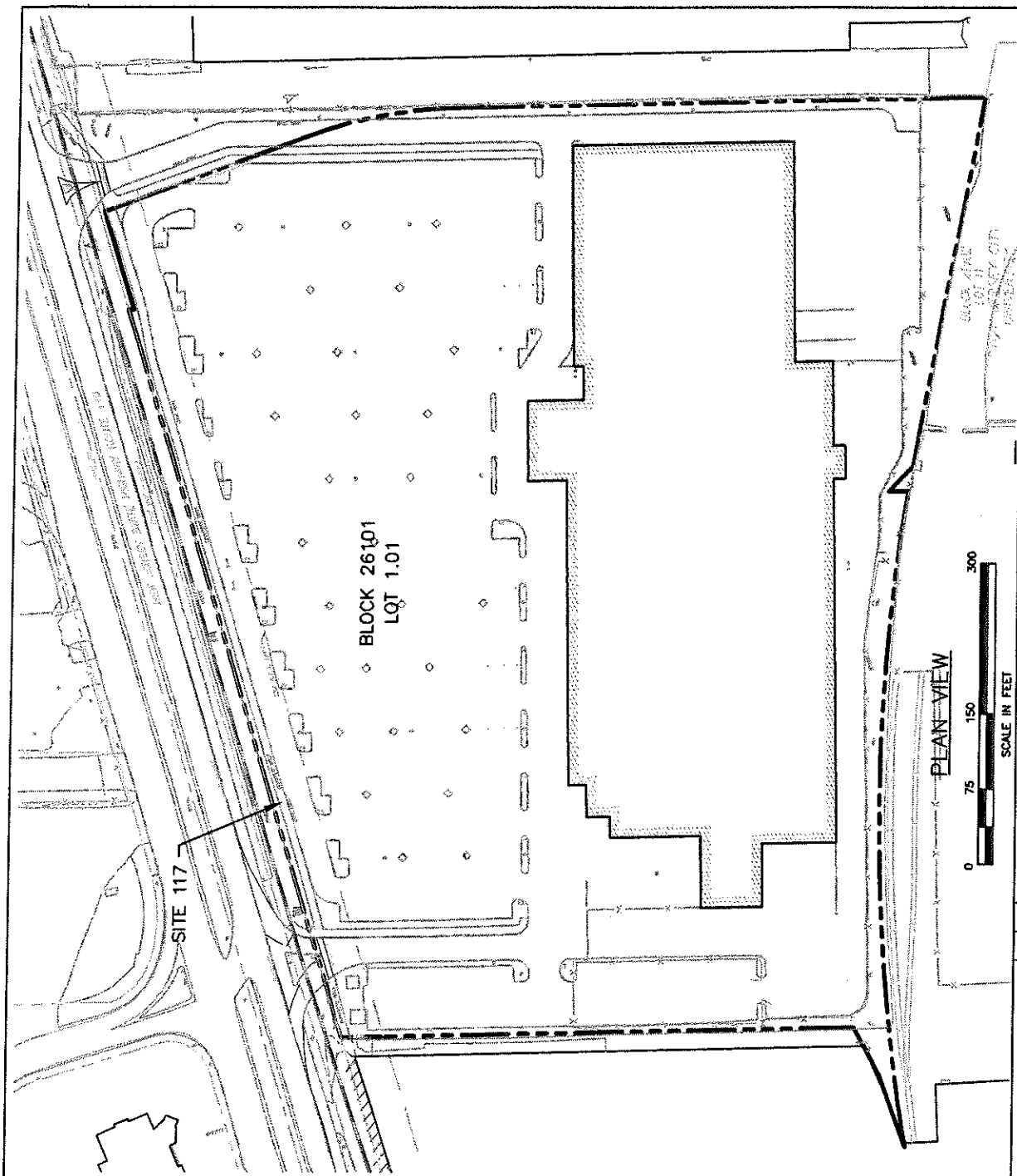
1. S 52° 35' 42" W 346.87 feet, southwestwardly along the westerly line of the former West Side Connecting Railroad, to a point of non-tangent curvature; thence –
2. Along the same, on a non-tangent arc to the left having a radius of 1960.00 feet, an arc length of 26.80 feet, (central angle 00° 47' 00") said arc being connected by a chord bearing S 52° 24' 50" W a chord distance of 26.80 feet; thence-
3. S 85° 26' 02" W 34.46 feet; thence –
4. S 49° 06' 18" E 19.50 feet; thence –
5. Along the same, on a non-tangent arc to the left having a radius of 1960.00 feet, an arc length of 655.11 feet, (central angle 19° 09' 02") said arc being connected by a chord bearing S 41° 42' 58" W a chord distance of 652.07 feet; thence –
6. N 21° 31' 18" E 77.11 feet; thence –
7. N 13° 28' 10" E 28.00 feet; thence –
8. N 12° 32' 29" E 24.91 feet; thence –
9. N 49° 06' 18" W 510.83 feet; to the easterly line of Lot 1, Block 21902 lands now or formerly of Bayfront Redevelopment LLC, as shown on the aforementioned minor subdivision plat, said lands also being lands formerly of the Morris Canal Banking Company as recited in the aforementioned deed book 8611, page 262; thence–

Along said easterly line, the same being courses two (2), three (3), and four (4), as described in said deed, reversed, the following three (3) courses:

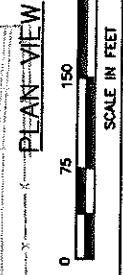
10. N 24° 46' 42" E 757.49 feet, thence –
11. S 49° 06' 18" E 5.21 feet; thence –
12. N 24° 46' 42" E 102.45 feet; to the proposed subdivision line as laid down on the aforementioned minor subdivision plat; thence –
13. S 68° 19' 24" E 214.57 feet; along said proposed subdivision line, to a point of curvature; thence–

14. Along the same, on an arc to the right having a radius of **470.00 feet**, an arc length of **157.65 feet**, (central angle **19 ° 13' 05"**) said arc being connected by a chord bearing **S 58° 42' 51" E** a chord distance of **156.91 feet**; to the intersection of the same with the aforementioned outside line of Lot 1, Block 26101; thence –
15. **S 49° 06' 18" E 527.02 feet**; along said outside line, to the Point and Place of **BEGINNING**.

CONTAINING: 637,677 square feet / 14.639 acres of land more or less.



- LEGEND**
- SIGN
 - UTILITY POLE
 - SURVEY PIN
 - SET PIN AND CAP
 - SANITARY MANHOLE
 - STORM MANHOLE
 - WELL
 - ELECTRIC MANHOLE
 - GAS VALVE
 - CATCH BASIN
 - SPOT ELEVATION
 - TREE/BRUSH LINE
 - EXISTING BUILDING
 - BM/A FORCEMAIN
 - LOT LINE
 - FENCE LINE
 - CONCRETE CURB



REV.	DATE	STATUS	DRFT	CHKD	BY

AMEC PROJ. No.: 3480050361
DRAWING: 3480050136-6100-A3PM-0000

PREPARED/DATE:	CHECKED/DATE:
STR 02/19/13	US 02/19/13

amtec
ENVIRONMENT & INFRASTRUCTURE
200 AMERICAN METRO BLVD, SUITE 113
HAMILTON, NEW JERSEY 08619

EXHIBIT A-3
PROPERTY MAP
BLOCK 26101, LOT 1.01
SA 5 - SITE 117 FORMER RYERSON STEEL
JERSEY CITY, NEW JERSEY

Exhibit B

Exhibit B-1A: Restricted Areas and Engineering Control Location Map

Exhibit B-1B: Engineering Control As-Built Diagrams

Exhibit B-2A: Restricted Area Map and Data Table - Total and Hexavalent Chromium (1-4')

Exhibit B-2B: Restricted Area Map and Data Table - Total and Hexavalent Chromium (4-8')

Exhibit B-2C: Restricted Area Map and Data Table - Total and Hexavalent Chromium (8-12')

Exhibit B-2D: Restricted Area Map and Data Table - Total and Hexavalent Chromium (>12')

Exhibit B-2E: Restricted Area Map and Data Table - PP Metals & Vanadium Concentrations

Exhibit B-2F: Restricted Area Map and Data Table - SVOC Concentrations

LEGEND

- BORING LOCATION
- CATCH BASIN
- ELECTRIC MANHOLE
- GAS VALVE
- SANITARY MANHOLE
- SIGN
- SPOT ELEVATION
- STORM MANHOLE
- SURVEY PIN
- TREE/BRUSH LINE
- UTILITY POLE
- WELL
- EXISTING BUILDING
- BM/VA FOREMAIN
- CONCRETE CURB
- FENCE LINE
- LOT LINE
- BELOW GROUND SURFACE

XXX
XXX
XXX

NOTE:

1. ALL BORINGS SAMPLED, ONLY EXCEEDENCES SHOWN.
2. NJDEP SOIL CLEANUP CRITERIA OR ACTION LEVEL (mg/kg) BASED ON REMEDIAL ACTION REPORT, FEB 1998 FOR:
3. TOTAL CHROMIUM: 500.0
HEXAVALENT CHROMIUM: 10.0
4. SAMPLE COLLECTION DEPTHS BASED ON GROUND SURFACE AT TIME OF SAMPLING.

CAS NUMBER FOR:
TOTAL CHROMIUM: 7440-47-3
HEXAVALENT CHROMIUM: 18540-29-9

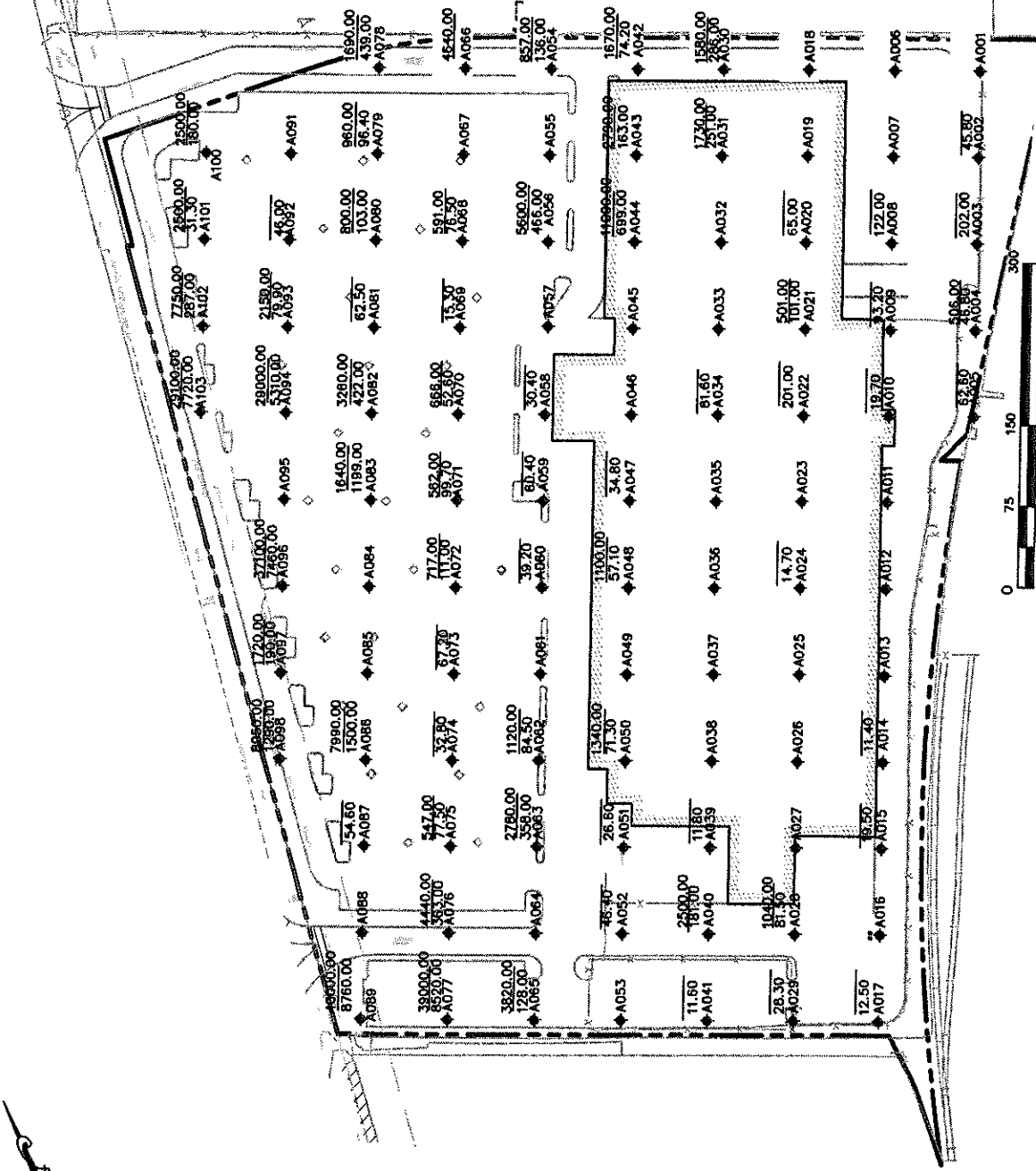
EXHIBIT B-2A

RESTRICTED AREA AND DATA MAP
BLOCK 28101 LOT 101
SA 5 - SITE 117 FORMER RYERSON STEEL
JERSEY CITY, NEW JERSEY



ENVIRONMENT & INFRASTRUCTURE
200 AMERICAN METRO BLVD, SUITE 113
HAMILTON, NEW JERSEY 08619

SCALE IN FEET



AMEC PROJ. No.: 3480050361
DRAWING: 3480050136-6100-RM0-0000

PREPARED/DATE:
STR 02/19/13

CHECKED/DATE:
US 02/19/13

STATUS

REV

DATE

LEGEND

- BORING LOCATION
- CATCH BASIN
- ELECTRIC MANHOLE
- GAS VALVE
- SANITARY MANHOLE
- SIGN
- SPOT ELEVATION
- STORM MANHOLE
- SURVEY PIN
- TREE/BRUSH LINE
- UTILITY POLE
- WELL
- EXISTING BUILDING
- BM/A FORCEMAIN
- CONCRETE CURB
- FENCE LINE
- LOT LINE

bgs

TOTAL Cr. (IN mg/kg)
HEX. Cr. (IN mg/kg)

NOTE:

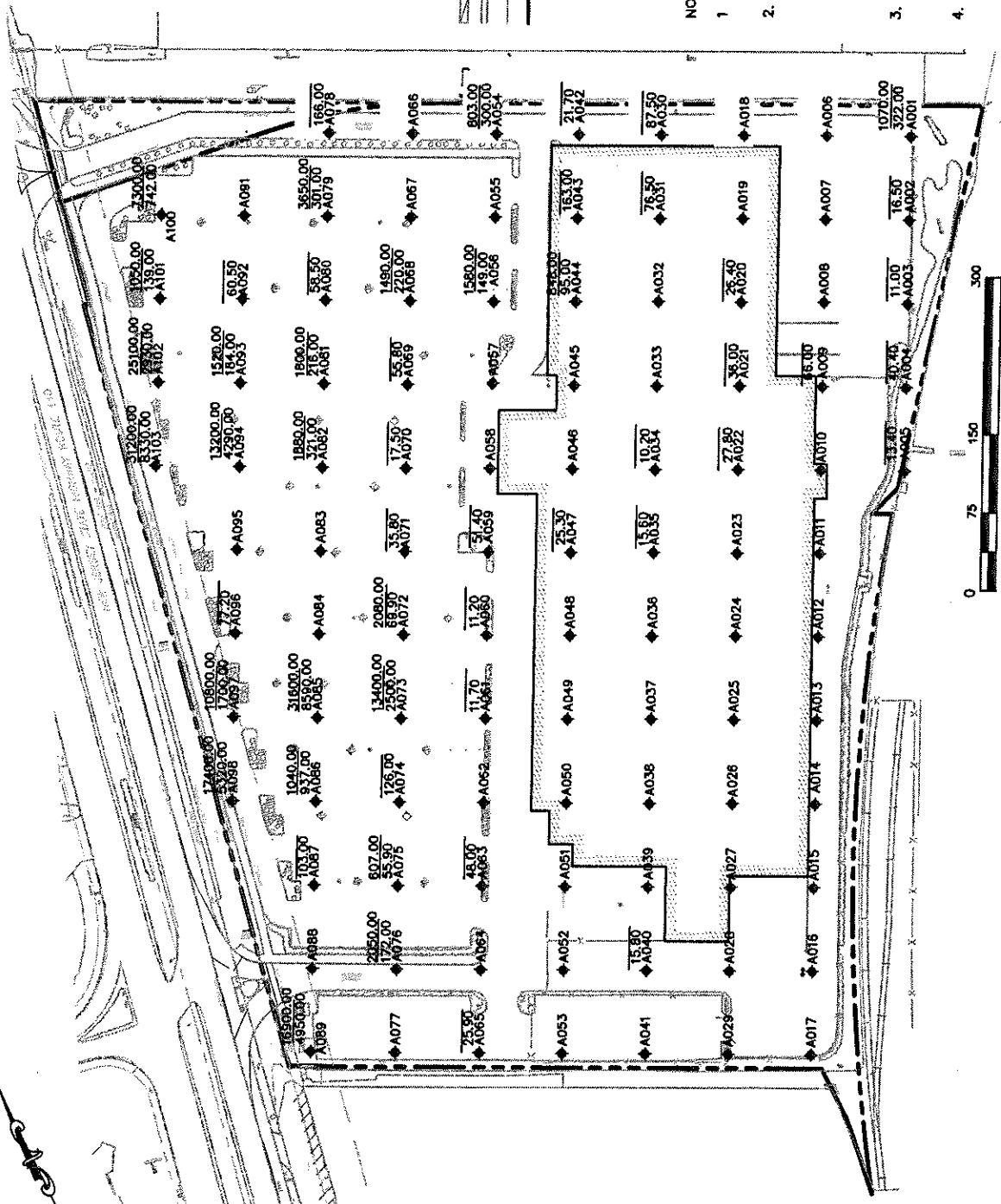
- ALL BORINGS SAMPLED, ONLY EXCEEDENCES SHOWN.
- NUDEP SOIL CLEANUP CRITERIA OR ACTION LEVEL (mg/kg) BASED ON REMEDIAL ACTION REPORT, FEB 1998 FOR:
- TOTAL CHROMIUM: 500.0
HEXAVALENT CHROMIUM: 10.0
- SAMPLE COLLECTION DEPTHS BASED ON GROUND SURFACE AT TIME OF SAMPLING.
- CAS NUMBER FOR:
TOTAL CHROMIUM: 7440-47-3
HEXAVALENT CHROMIUM: 18540-29-9

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ENVIRONMENT & INFRASTRUCTURE
200 AMERICAN METRO BLVD, SUITE 113
HAMILTON, NEW JERSEY 08619

AMEC PROJ No.: 3480050361
DRAWING: 3480050136-6100-RAND-0000

PREPARED/DATE: STR 02/19/13
CHECKED/DATE: US 02/19/13

EXHIBIT B-28
RESTRICTED AREA AND DATA MAP
TOTAL AND HEXAVALENT CHROMIUM (4'-8' bgs)
BLOCK 26101, LOT 1.01
SA 5 - SITE 117 FORMER RYERSON STEEL
JERSEY CITY, NEW JERSEY



LEGEND

- BORING LOCATION
- CATCH BASIN
- ELECTRIC MANHOLE
- GAS VALVE
- SANITARY MANHOLE
- SIGN
- SPOT ELEVATION
- STORM MANHOLE
- SURVEY PIN
- SET PVI AND CAP
- TREE/BRUSH LINE
- UTILITY POLE
- WELL
- EXISTING BUILDING
- BM/UA FORCEMAIN
- CONCRETE CURB
- FENCE LINE
- LOT LINE
- Below GROUND SURFACE

XXX
XXX
XXX
TOTAL Cr. (IN mg/kg)
HEX. Cr. (IN mg/kg)

NOTE:

1. ALL BORINGS SAMPLED, ONLY EXCEEDENCES SHOWN.
2. NJDEP SOIL CLEANUP CRITERIA OR ACTION LEVEL (mg/kg) BASED ON REMEDIAL ACTION REPORT, FEB 1998 FOR:
TOTAL CHROMIUM: 500.0
HEXAVALENT CHROMIUM: 10.0
3. SAMPLE COLLECTION DEPTHS BASED ON GROUND SURFACE AT TIME OF SAMPLING.
4. CAS NUMBER FOR:
TOTAL CHROMIUM: 7440-47-3
HEXAVALENT CHROMIUM: 18540-29-9

EXHIBIT B-2C

RESTRICTED AREA AND DATA MAP
TOTAL AND HEXAVALENT CHROMIUM (8'-12' bgs)
BLOCK 28101, LOT 1.01
SA 5 - SITE 117 FORMER RYERSON STEEL
JERSEY CITY, NEW JERSEY

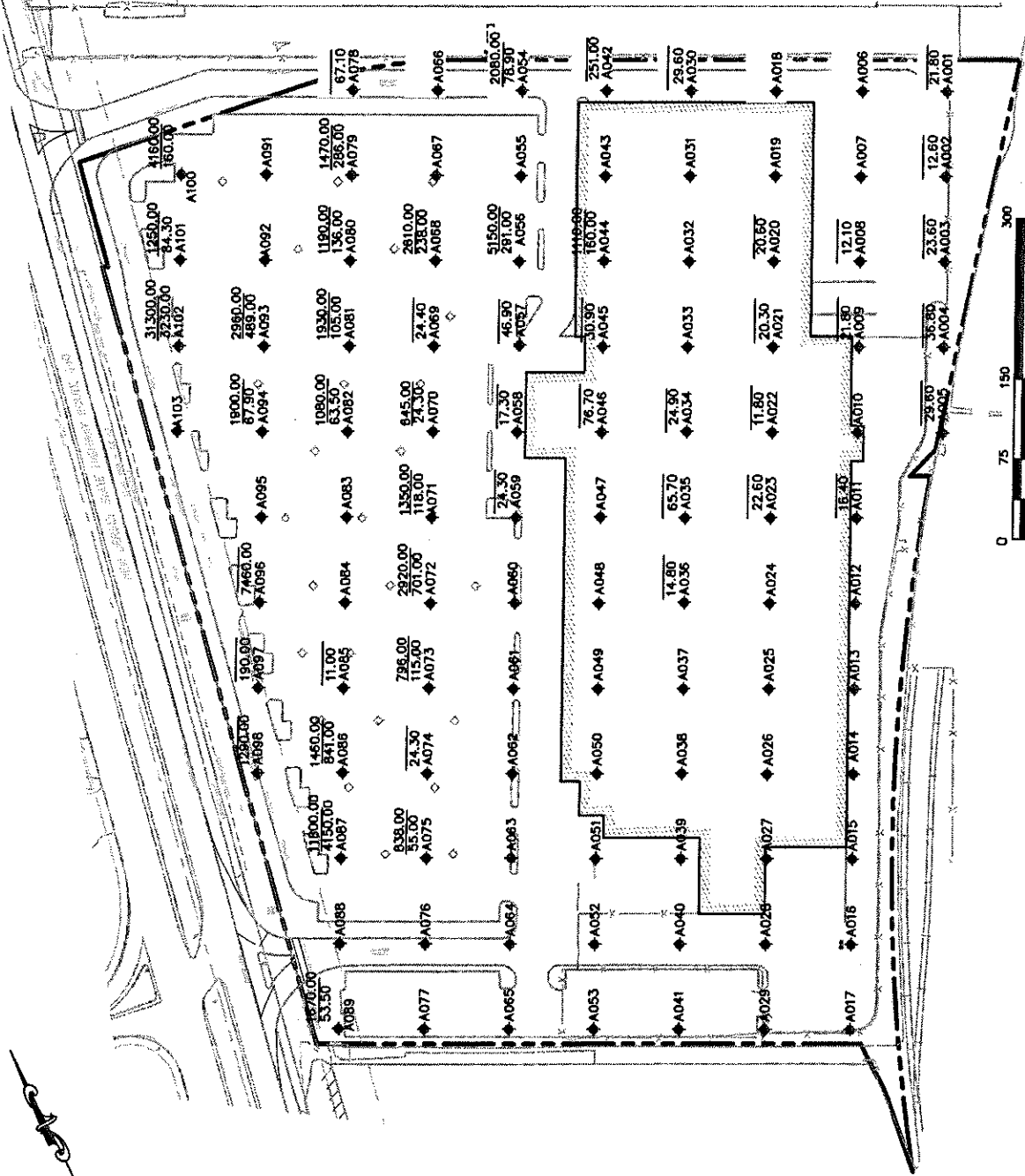
amec
ENVIRONMENT & INFRASTRUCTURE
200 AMERICAN METRO BLVD, SUITE 113
HAMILTON, NEW JERSEY 08619

AMEC PROJ No.: 3480050361
DRAWING: 3480050136-6100-RAM0-0000

PREPARED/DATE: STR 02/19/13
CHECKED/DATE: US 02/19/13

REV	DATE	STATUS
001	02/19/13	01

SCALE IN FEET



LEGEND

- ◆ BORING LOCATION
- CATCH BASIN
- ⊖ ELECTRIC MANHOLE
- ⊗ GAS VALVE
- ⊙ SANITARY MANHOLE
- ⊙ SIGN
- ⊙ SPOT ELEVATION
- ⊙ STORM MANHOLE
- ⊙ SURVEY PIN
- ⊙ SET PIN AND CAP
- ⊙ TREE/BRUSH LINE
- ⊙ UTILITY POLE
- ⊙ WELL
- ⊙ EXISTING BUILDING
- ⊙ BM/A FORCEMAIN
- ⊙ CONCRETE CURB
- ⊙ FENCE LINE
- ⊙ LOT LINE
- ⊙ BELOW GROUND SURFACE

TOTAL Cr. (IN mg/kg)
 HEX. Cr. (IN mg/kg)

NOTE:

1. ALL BORINGS SAMPLED, ONLY EXCEEDENCES SHOWN.
2. NUDEP SOIL CLEANUP CRITERIA OR ACTION LEVEL (mg/kg) BASED ON REMEDIAL ACTION REPORT, FEB 1998 FOR:
3. TOTAL CHROMIUM: 500.0
HEXAVALENT CHROMIUM: 10.0
4. CAS NUMBER FOR:
TOTAL CHROMIUM: 7440-47-3
HEXAVALENT CHROMIUM: 18540-29-9

EXHIBIT B-20

RESTRICTED AREA AND DATA MAP
 TOTAL AND HEXAVALENT CHROMIUM (>12' bgs)
 BLOCK 28101, LOT 1.01
 SA 5 - SITE 117 FORMER RYERSON STEEL
 JERSEY CITY, NEW JERSEY

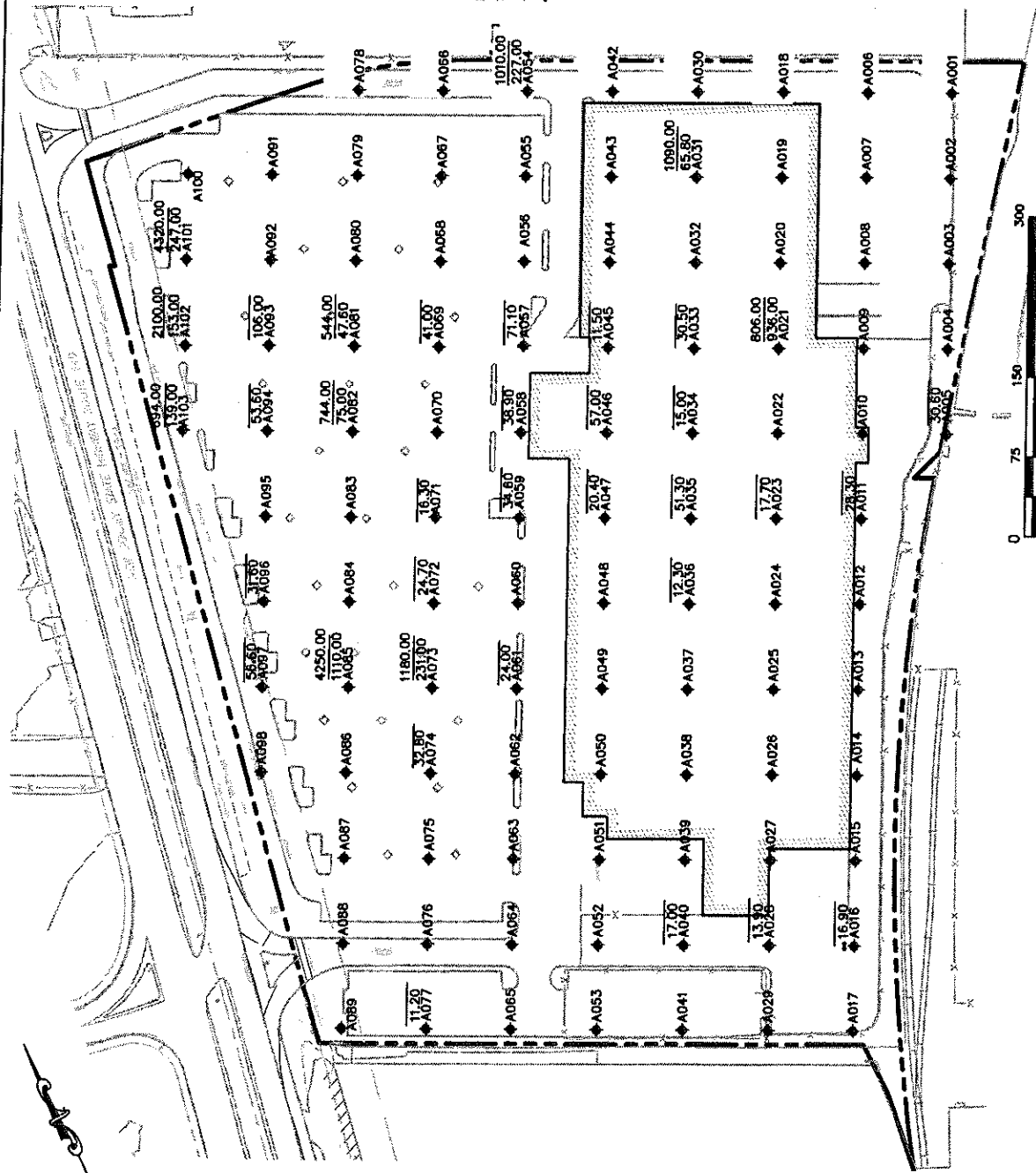


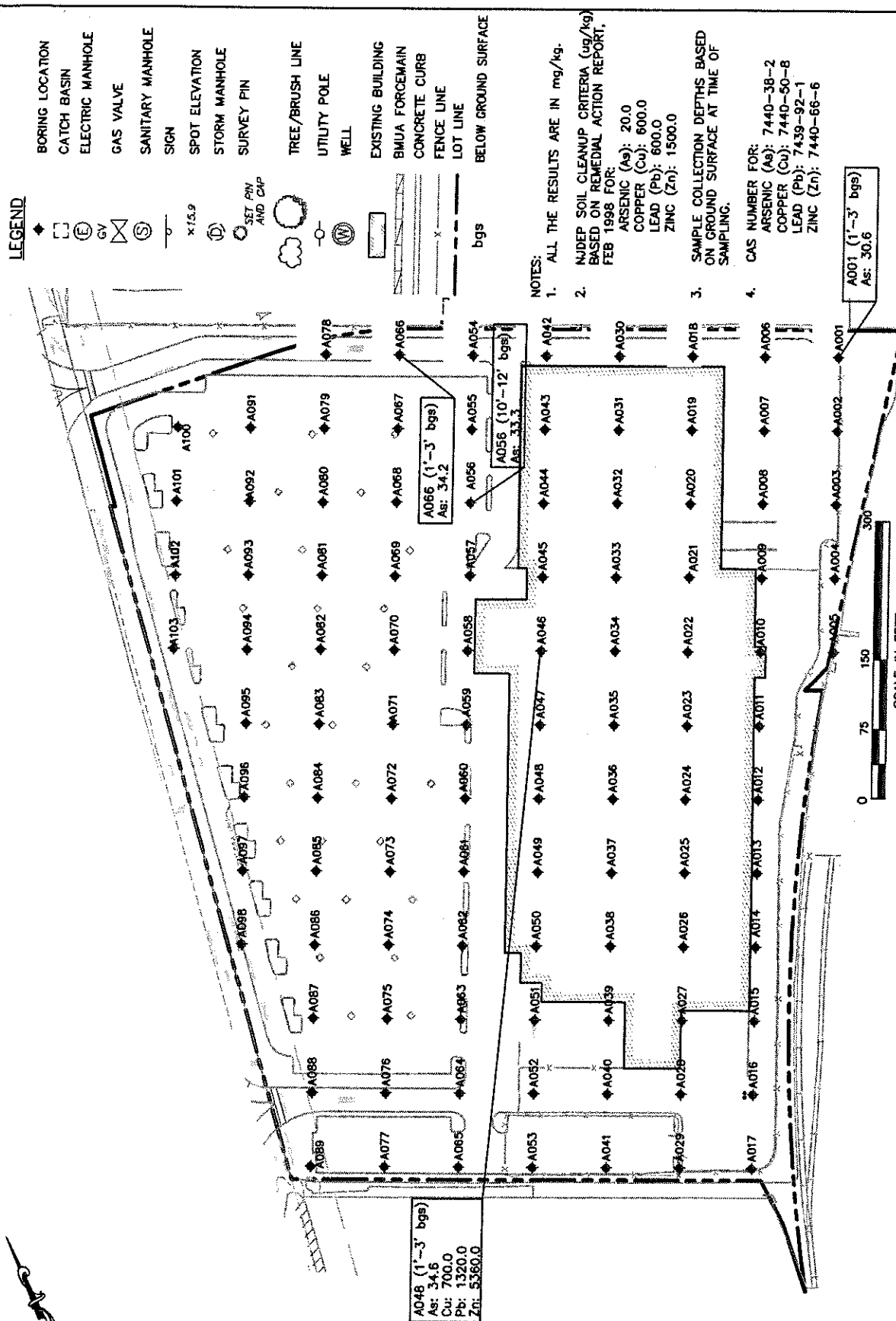
ENVIRONMENT & INFRASTRUCTURE
 200 AMERICAN METRO BLVD, SUITE 113
 HAMILTON, NEW JERSEY 08619

AMEC PROJ No.: 3480050361
 DRAWING: 3480050136-6100-RAM0-0000

PREPARED/DATE: STR 02/19/13
 CHECKED/DATE: US 02/19/13

SCALE IN FEET





LEGEND

- ◆ BORING LOCATION
- CATCH BASIN
- ⊗ ELECTRIC MANHOLE
- ⊗ GAS VALVE
- ⊗ SANITARY MANHOLE
- ⊗ SIGN
- ⊗ SPOT ELEVATION
- ⊗ STORM MANHOLE
- ⊗ SURVEY PIN
- ⊗ TREE/BRUSH LINE
- ⊗ UTILITY POLE
- ⊗ WELL
- ⊗ EXISTING BUILDING
- ⊗ BM/JA FORCEMAIN
- ⊗ CONCRETE CURB
- ⊗ FENCE LINE
- ⊗ LOT LINE
- ⊗ BELDW GROUND SURFACE

A100 (7.5'-9.5' bgs)
Benzo(a)pyrene: 11,000.0
Benzo(b)fluoranthene: 5,300.0
Benzo(a)anthracene: 14,000

A087 (1'-3' bgs)
Benzo(a)pyrene: 6,400.0
Benzo(b)fluoranthene: 7,500.0
Benzo(k)fluoranthene: 3,000.0
Benzo(a)anthracene: 5,000.0
Dibenzo(a,h)anthracene: 1,100.0

A065 (1'-3' bgs)
Benzo(a)pyrene: 30,000.0
Benzo(b)fluoranthene: 37,000.0
Benzo(k)fluoranthene: 14,000.0
Benzo(a)anthracene: 49,000.0
Dibenzo(a,h)anthracene: 5,200.0
Chrysene: 46,000
Indeno(1,2,3-cd)pyrene: 14,000

A040 (1'-3' bgs)
Benzo(a)pyrene: 5,300.0
Benzo(b)fluoranthene: 6,800.0
Benzo(a)anthracene: 5,300.0

A056 (1'-3 bgs)
Benzo(a)pyrene: 4,600.0
Benzo(b)fluoranthene: 4,600.0

A020 (1'-3' bgs)
Benzo(a)pyrene: 2,000.0



NOTE:

- ALL THE RESULTS ARE IN mg/kg.
- NUDEP SOIL CLEANUP CRITERIA (ug/kg) BASED ON REMEDIAL ACTION REPORT, FEB 1998 FOR:
Benzo(a)pyrene: 660.0
Benzo(b)fluoranthene: 4,000.0
Benzo(k)fluoranthene: 4,000.0
Benzo(a)anthracene: 4,000.0
Dibenzo(a,h)anthracene: 660.0
Chrysene: 40,000.0
Indeno(1,2,3-cd)pyrene: 4,000.0
- SAMPLE COLLECTION DEPTHS BASED ON GROUND SURFACE AT TIME OF SAMPLING.
- CAS NUMBER FOR:
Benzo(a)pyrene: 50-32-8
Benzo(b)fluoranthene: 205-99-2
Benzo(k)fluoranthene: 207-08-9
Benzo(a)anthracene: 56-55-3
Dibenzo(a,h)anthracene: 53-70-3
Chrysene: 218-01-9
Indeno(1,2,3-cd)pyrene: 193-39-5



ENVIRONMENT & INFRASTRUCTURE
200 AMERICAN METRO BLVD, SUITE 113
HAMILTON, NEW JERSEY 08619

AMEC PROJ No.: 3480050361
DRAWING: 3480050136-6100-RAM-0000

PREPARED/DATE:
STR 02/19/13

CHECKED/DATE:
US 02/19/13

EXHIBIT B-2F

RESTRICTED AREA AND DATA MAP
SEMIVOLATILE ORGANIC COMPOUNDS
BLOCK 28101, LOT 1.01
SA 5 - SITE 117 FORMER RYERSON STEEL
JERSEY CITY, NEW JERSEY

Exhibit C

C-1: Deed Notice as Institutional Controls

C-2: Engineering Controls

Former Ryerson Steel / Mutual Chemical Site – NJDEP Chromium Site 117
Block 26101, Lot 1.01
Jersey City, New Jersey 07305

Exhibit C-1 includes a description of the deed notice as institutional control including monitoring and reporting requirements.

Exhibit C-2 includes a description of engineering controls consisting of an LLDPE liner system with either vegetation, asphalt pavement, concrete, or building concrete slab as a final surface cap and an asphalt pavement cap; operations and maintenance, monitoring and reporting requirements.

Exhibit C-1
Deed Notice as Institutional Controls

Former Ryerson Steel / Mutual Chemical Site – NJDEP Chromium Site 117
Block 26101, Lot 1.01
Jersey City, New Jersey 07305

(A) General Description:

- (1) The Property shown on Exhibit B-1A known as Block 26101, Lot 1.01 is a Restricted Area. The estimated size of the Restricted Area is approximately 15 acres.
- (2) Proper precautions must be taken to prevent disturbance (i.e., excavation or digging) of the engineering controls when in the Restricted Area. See subsections 7A and 7B of the Deed Notice for requirements for Alterations, Improvements, Disturbances, and Emergencies.
- (3) The restrictions will prevent contact with soils above the NJDEP Soil Cleanup Criteria or Action Levels.

(B) Description of monitoring:

- (1) Quarterly visual inspections of the Restricted Area will be conducted to document that the engineering controls are in good condition and to determine whether any disturbances of the soil in the Restricted Area may have resulted in unacceptable exposure to the soil contamination.
- (2) Quarterly visual inspections of the Restricted Area will be conducted to determine whether there have been any land use changes subsequent to the filing of this Deed Notice or the most recent biennial certification, whichever is more recent.
- (3) Quarterly visual inspections of the Restricted Area will be conducted to determine whether the current land use on the Property is consistent with the restrictions in this Deed Notice.
- (4) A review will be conducted to determine if any newly promulgated or modified requirements of applicable regulations or laws apply to the Property.
- (5) A review will be conducted to determine if any new standards, regulations, or laws apply to the site that might necessitate additional sampling in order to evaluate the protectiveness of the remedial action which includes this Deed Notice. If necessary, this additional sampling will be performed.

(C) Biennial certification items:

A monitoring report will be included in the biennial certification. Components of the monitoring report will include the following:

(1) A report of all conditions set forth in Deed Notice to document that they have been adhered to, including evaluation of any available documents created as a result of changes in land use or incidents.

(2) A report that determines whether or not the land use at the Property has remained consistent with the restrictions in the Deed Notice.

(3) A report that determines whether or not the Deed Notice continues to be protective of the public health and safety and of the environment.

Exhibits C-2 through C-6

Engineering Controls

C-2: Asphalt Pavement/Geomembrane Liner Cap

C-3: Concrete/Geomembrane Liner Cap

C-4: Building Concrete Slab/Geomembrane Liner Cap

C-5: Vegetative/Geomembrane Liner Cap

C-6: Asphalt Pavement Cap

Former Ryerson Steel Site – NJDEP Chromium Site 117

Block 26101, Lot 1.01

Jersey City, New Jersey 07305

(A) General Description:

- (1) Engineering controls (from the ground surface to contaminated soil) in areas of the geomembrane liner system consist of:
 - a) Asphalt pavement, concrete, building concrete slab, or vegetative surface cap followed by;
 - b) A minimum of 6 inches to greater than 12 inches (typically) of clean fill material followed by;
 - c) A geomembrane drainage material followed by;
 - d) A 40-mil linear low density polyethylene (LLDPE) impervious geomembrane followed by;
 - e) A woven felt material
- (2) Engineering controls in a small area on the southeastern corner of the site consists of asphalt pavement only as the engineering control
- (3) The objective of the Engineering Controls is to prevent direct contact with soils that are above the applicable NJDEP Soil Cleanup Criteria or Action Levels.
- (4) The Engineering Controls are intended to function as a barrier to underlying soils that are above the applicable NJDEP Soil Cleanup Criteria or Action Levels.

(B) Description of the operation and maintenance:

Visual inspections of the Property will be performed quarterly to document that:

- (1) Each engineering control is in good condition and to document the integrity, operability, and effectiveness of each engineering control;
- (2) Each engineering control continues to function as designed and intended in order to protect the public health and safety and the environment;

(3) Each alteration, excavation or disturbance of any engineering control is timely and appropriately addressed to maintain the integrity of the engineering control (also, see subsections 7A and 7B of this Deed Notice for directions on Alterations, Improvements, Disturbances, and Emergencies);

(4) The integrity of each institutional control is maintained so that the remedial action continues to be protective of the public health and safety and of the environment;

(5) Records of the inspections are maintained as listed in Deed Notice subparagraph 5A. Should the visual inspection indicate that other activities are necessary, those activities will be listed and executed; and

(6) A review of any new standards, regulations, or laws will be conducted to evaluate the protectiveness of the remedial action, which includes this Deed Notice. Should the review indicate that other activities are necessary, those activities will be listed and executed.

(C) Biennial Certification items:

The monitoring report will be included in the Biennial Certification. Components of the monitoring report will include the following:

(1) A report of all conditions set forth in Deed Notice subparagraph 2.ii to document that they have been adhered to, including an evaluation to determine whether the Engineering Controls are continuing to meet their original objectives and intended functions.

(2) A report to determine whether the Engineering Controls continue to operate as designed.

(3) A report to determine whether the Engineering Controls continue to be protective of the public health and safety and of the environment.

FILED
20150209010011240
02/09/2015 10:14:20 AM
DEED
NUMBER OF PAGES : 29
JPISCOPO

APPENDIX D-2

Deed Notice for Wedge Parcel (Block 26101, Lot 1.02)

DEED NOTICE

IN ACCORDANCE WITH N.J.S.A. 58:10B-13, THIS DOCUMENT IS TO BE RECORDED IN THE SAME MANNER AS ARE DEEDS AND OTHER INTERESTS IN REAL PROPERTY.

Prepared by: _____

[Signature]

Russell Bershad

[Print name below signature]

Recorded by: _____

[Signature, Officer of County Recording Office]

[Print name below signature]



20150413010030050 1/23
04/13/2015 10:03:54 AM DEED
Bk: 9032 Pg: 535
Pamela E. Gardner
Hudson County, Register of Deeds
Receipt No. 1004696

DEED NOTICE

This Deed Notice is made as of the 1st day of April, 2015, by Bayfront Redevelopment, LLC, a wholly owned subsidiary of Honeywell International Inc., 101 Columbia Road, Morristown, NJ 07962 (together with its successors and assigns, collectively "Owner").

1. **THE PROPERTY.** Bayfront Redevelopment, LLC, is the owner in fee simple of certain real property designated as Block 26101, Lot 1.02, on the tax map of the City of Jersey City, Hudson County; the New Jersey Department of Environmental Protection (NJDEP) Program Interest Number (Preferred ID) for the contaminated site which includes this property is 008809; and the property is more particularly described in Exhibit A, which is attached hereto and made a part hereof (the "Property").

2. REMEDIATION.

i. The NJDEP has approved this Deed Notice as an institutional control for the Property, which is part of the remediation of the Property.

ii. N.J.A.C. 7:26C-7 requires the Owner, among other persons, to obtain a soil remedial action permit for the soil remedial action at the Property. That permit will contain the monitoring, maintenance and biennial certification requirements that apply to the Property.

3. **SOIL CONTAMINATION.** G. Heller Enterprises, Inc., prior owner of the Property, in cooperation with Honeywell International Inc. (Honeywell), remediated contaminated soil at the Property, such that soil contamination remains in certain areas of the Property in concentrations that do not allow for the unrestricted use of the Property; this soil contamination is described, including the type, concentration and specific location of such contaminants, in Exhibit B, which

Action Report dated February 1998, and the New Jersey Department of Environmental Protection issued a No Further Action Letter for soils dated March 27, 1998. As a result, there is a statutory requirement for this Deed Notice and engineering controls in accordance with N.J.S.A. 58:10B-13. (NOTE: An institutional control for groundwater referred to as a Classification Exception Area [CEA] was approved by the NJDEP on February 16, 2012; CEA information can be obtained from the NJDEP via Open Public Records Act records request.)

4. **CONSIDERATION.** In accordance with the remedial action for the Property, and in consideration of the terms and conditions of that remedial action, and other good and valuable consideration, Owner has agreed to subject the Property to certain statutory and regulatory requirements that impose restrictions upon the use of the Property, to restrict certain uses of the Property, and to provide notice to subsequent owners, lessees and operators of the restrictions and the monitoring, maintenance, and biennial certification requirements outlined in this Deed Notice and required by law, as set forth herein.

5A. **RESTRICTED AREAS.** Due to the presence of contamination remaining at concentrations that do not allow for unrestricted use, the Owner has agreed, as part of the remedial action for the Property, to restrict the use of certain parts of the Property (the "Restricted Areas"); a narrative description of these restrictions is provided in Exhibit C, which is attached hereto and made a part hereof. The Owner has also agreed to maintain a list of these restrictions on site for inspection by governmental officials, operators, tenants, lessees, and contractors and workers intending to conduct invasive work within the Restricted Area.

5B. **RESTRICTED LAND USES.** The following statutory land use restrictions apply to the Restricted Areas:

i. The Brownfield and Contaminated Site Remediation Act, N.J.S.A. 58:10B-12.g(10), prohibits the conversion of a contaminated site, remediated to non-residential soil remediation standards that require the maintenance of engineering or institutional controls, to a child care facility, or public, private, or charter school without the Department's prior written approval, unless a presumptive remedy is implemented; and

ii. The Brownfield and Contaminated Site Remediation Act, N.J.S.A. 58:10B-12.g(12), prohibits the conversion of a landfill, with gas venting systems and or leachate collection systems, to a single family residence or a child care facility without the Department's prior written approval.

5C. **ENGINEERING CONTROLS.** Due to the presence and concentration of these contaminants, the Owner has also agreed, as part of the remedial action for the Property, to the placement of certain engineering controls on the Property; a narrative description of these engineering controls is provided in Exhibit C.

5D. **WORKER PROTECTION PLAN.** Honeywell has prepared a Worker Protection Plan for use by the owner, lessee and/or operators for the protection of workers who may be potentially exposed to chromium-impacted soils or groundwater in conjunction with utility or other ground intrusive work on the Property; the Worker Protection Plan identifies health and

safety requirements for the protection of personnel and contractors who may perform ground intrusive activities (e.g., digging, drilling, excavation) that may disturb existing engineering controls and provides a basis for worker awareness to inform workers of potential hazards associated with chromium-impacted media. The Owner shall make the Worker Protection Plan available to operators, tenants, contractors and/or utility workers intending to conduct invasive work within the Restricted Area to prevent unauthorized disturbance of engineering controls and potential exposure to contaminants

6A. CHANGE IN OWNERSHIP AND REZONING.

i. The Owner and the subsequent owners and lessees, shall cause all leases, grants, and other written transfers of an interest in the Restricted Areas to contain a provision expressly requiring all holders thereof to take the Property subject to the restrictions contained herein and to comply with all, and not to violate any of the conditions of this Deed Notice. Nothing contained in this Paragraph shall be construed as limiting any obligation of any person to provide any notice required by any law, regulation, or order of any governmental authority.

ii. The Owner and the subsequent owners shall provide written notice to the Department of Environmental Protection on a form provided by the Department and available at www.nj.gov/srp/forms within thirty (30) calendar days after the effective date of any conveyance, grant, gift, or other transfer, in whole or in part, of the owner's interest in the Restricted Area.

iii. The Owner and the subsequent owners shall provide written notice to the Department, on a form available from the Department at www.nj.gov/srp/forms, within thirty (30) calendar days after the owner's petition for or filing of any document initiating a rezoning of the Property to residential.

6B. SUCCESSORS AND ASSIGNS. This Deed Notice shall be binding upon Owner and upon Owner's successors and assigns, and subsequent owners, lessees and operators while each is an owner, lessee, or operator of the Property.

7A. ALTERATIONS, IMPROVEMENTS, AND DISTURBANCES.

i. The Owner and all subsequent owners and lessees shall notify any person, including, without limitation, tenants, employees of tenants, and contractors, intending to conduct invasive work or excavate within the Restricted Areas, of the nature and location of contamination in the Restricted Areas, of the precautions necessary to minimize potential human exposure to contaminants, and, of the Worker Protection Plan that must be followed.

ii. Except as provided in Paragraph 7B, below, no person shall make, or allow to be made, any alteration, improvement, or disturbance in, to, or about the Property which disturbs any engineering control at the Property without first obtaining a soil remedial action permit modification pursuant to N.J.A.C. 7:26C-7. Nothing herein shall constitute a waiver of the obligation of any person to comply with all applicable laws and regulations including,

without limitation, the applicable rules of the Occupational Safety and Health Administration.

iii. Notwithstanding subparagraph 7Aii., above, a soil remedial action permit modification is not required for any alteration, improvement, or disturbance provided that the owner, lessee or operator:

(A) Notifies the Department of Environmental Protection of the activity by calling the DEP Hotline, at 1-877-WARN-DEP or 1-877-927-6337 within twenty-four (24) hours after the beginning of each alteration, improvement, or disturbance; and then notifies Honeywell (by calling 855-727-2658) and the Owner at least seventy-two (72) hours before the beginning of each alteration, improvement, or disturbance;

(B) Restores any disturbance of an engineering control to pre-disturbance conditions within sixty (60) calendar days after the initiation of the alteration, improvement or disturbance;

(C) Follows the Worker Protection Plan and all applicable worker health and safety laws and regulations during the alteration, improvement, or disturbance, and during the restoration;

(D) Takes appropriate measures so that human exposure to contamination in excess of the remediation standards does not occur; and

(E) Describes, in the next biennial certification the nature of the alteration, improvement, or disturbance, the dates and duration of the alteration, improvement, or disturbance, the name of key individuals and their affiliations conducting the alteration, improvement, or disturbance, a description of the notice the Owner gave to those persons prior to the disturbance.

7B. EMERGENCIES. In the event of an emergency which presents, or may present, an unacceptable risk to the public health and safety, or to the environment, or immediate environmental concern, see N.J.S.A. 58:10C-2, any person may temporarily breach an engineering control provided that that person complies with each of the following:

i. Immediately notifies the Department of Environmental Protection of the emergency, by calling the DEP Hotline at 1-877-WARN-DEP or 1-877-927-6337 and then notifies Honeywell by calling 855-727-2658;

ii. Hires a Licensed Site Remediation Professional, unless the Restricted Areas includes an unregulated heating oil tank, to respond to the emergency;

iii. Limits both the actual disturbance and the time needed for the disturbance to the minimum reasonably necessary to adequately respond to the emergency;

iv. Implements all measures necessary to limit actual or potential, present or future risk of exposure to humans or the environment to the contamination;

v. Notifies the Department of Environmental Protection when the emergency or immediate environmental concern has ended by calling the DEP Hotline at 1-877-WARNDEP or 1-877-927-6337; and

vi. Restores the engineering control to the pre-emergency conditions as soon as possible, and provides notification to the Department of Environmental Protection within sixty (60) calendar days after completion of the restoration of the engineering control, including: (a) the nature and likely cause of the emergency; (b) the potential discharges of or exposures to contaminants, if any, that may have occurred; (c) the measures that have been taken to mitigate the effects of the emergency on human health and the environment; (d) the measures completed or implemented to restore the engineering control; and (e) the changes to the engineering control or site operation and maintenance plan to prevent reoccurrence of such conditions in the future.

8. TERMINATION OF DEED NOTICE.

i. This Deed Notice may be terminated only upon filing of a Termination of Deed Notice, available at N.J.A.C. 7:26C Appendix C, with the office of the Hudson County Register of Deeds expressly terminating this Deed Notice.

ii. Within thirty (30) calendar days after the filing of a Termination of Deed Notice, the owner of the property shall apply to the Department for termination of the soil remedial action permit pursuant to N.J.A.C. 7:26C-7.

9. ACCESS. The Owner, and the subsequent owners, lessees and operators agree to allow the Department, its agents and representatives access to the Property to inspect and evaluate the continued protectiveness of the remedial action that includes this Deed Notice and to conduct additional remediation to provide for the protection of the public health and safety and of the environment if the subsequent owners, lessees and operators, during their ownership, tenancy, or operation, and the Owner fail to conduct such remediation pursuant to this Deed Notice as required by law. The Owner, and the subsequent owners and lessees, shall also cause all leases, subleases, grants, and other written transfers of an interest in the Restricted Areas to contain a provision expressly requiring that all holders thereof provide such access to the Department.

10. ENFORCEMENT OF VIOLATIONS.

i. This Deed Notice itself is not intended to create any interest in real estate in favor of the Department of Environmental Protection, nor to create a lien against the Property, but merely is intended to provide notice of certain conditions and restrictions on the Property and to reflect the regulatory and statutory obligations imposed as a conditional remedial action for this site.

ii. The restrictions provided herein may be enforceable solely by the Department against any person who violates this Deed Notice. To enforce violations of this Deed Notice, the Department may initiate one or more enforcement actions pursuant to N.J.S.A. 58:10-23.11, and N.J.S.A. 58:10C, and require additional remediation and assess damages pursuant to N.J.S.A. 58:10-23.11, and N.J.S.A. 58:10C.

11. SEVERABILITY. If any court of competent jurisdiction determines that any provision of this Deed Notice requires modification, such provision shall be deemed to have been modified automatically to conform to such requirements. If a court of competent jurisdiction determines that any provision of this Deed Notice is invalid or unenforceable and the provision is of such a nature that it cannot be modified, the provision shall be deemed deleted from this instrument as though the provision had never been included herein. In either case, the remaining provisions of this Deed Notice shall remain in full force and effect.

12A. EXHIBIT A. Exhibit A includes the following maps of the Property and the vicinity:

- i. Exhibit A-1: Vicinity Map - A map that identifies by name the roads, and other important geographical features in the vicinity of the Property;
- ii. Exhibit A-2: Metes and Bounds Description - A tax map of lots and blocks as wells as metes and bounds description of the Property, including reference to tax lot and block numbers for the Property;
- iii. Exhibit A-3: Property Map - A scaled map of the Property, scaled at one inch to 200 feet or less, and if more than one map is submitted, the maps shall be presented as overlays, keyed to a base map; and the Property Map shall include diagrams of major surface topographical features such as buildings, roads, and parking lots.

12B. EXHIBIT B. Exhibit B includes the following descriptions of the Restricted Areas:

- i. Exhibit B-1: Restricted Area Map - A separate map for each restricted area that includes:
 - (A) As-built diagrams of each engineering control, including caps, fences, slurry walls, (and, if any) ground water monitoring wells, extent of the ground water classification exception area, pumping and treatment systems that may be required as part of a ground water engineering control in addition to the deed notice;
 - (B) As-built diagrams of any buildings, roads, parking lots and other structures that function as engineering controls; and
 - (C) Designation of all soil and sediment sample locations within the restricted areas that exceed any soil or sediment standard that are keyed into one of the tables described in the following paragraph.

ii. Exhibit B-2: Restricted Area Data Table - A separate table for each restricted area that includes either (A) or (B) through (F) (Data not available electronically; it is provided on the figure presented as Exhibit B-2):

(A) Only for historic fill extending over the entire site or a portion of the site and for which analytical data are limited or do not exist, a narrative that states that historic fill is present at the site, a description of the fill material (e.g., ash, cinders, brick, dredge material), and a statement that such material may include, but is not limited to, contaminants such as PAHs and metals;

(B) Sample location designation from Restricted Area map (Exhibit B-1) (Locations are shown on Exhibit B-2);

(C) Sample elevation based upon mean sea level (Sample elevations are not available based on information provided by historic reports. Sample depth intervals were provided however, the ground surface elevation has changed due to the implemented remedial action and development of the property);

(D) Name and chemical abstract service registry number of each contaminant with a concentration that exceeds the unrestricted use standard (CAS Numbers are provided on Exhibit B-2);

(E) The restricted and unrestricted use standards for each contaminant in the table; and (applicable standards for each contaminant are provided on Exhibit B-2);

(F) The remaining concentration of each contaminant at each sample location at each elevation (concentrations are provided on Exhibit B-2).

12C. EXHIBIT C. Exhibit C includes narrative descriptions of the institutional controls and engineering controls as follows:

i. Exhibit C-1: Deed Notice as Institutional Control: Exhibit C-1 includes a narrative description of the restriction and obligations of this Deed Notice that are in addition to those described above, as follows:

(A) Description and estimated size of the Restricted Areas as described above;

(B) Description of the restrictions on the Property by operation of this Deed Notice;
and

(C) The objective of the restrictions.

ii. Exhibit C-2: Asphalt Pavement / Geomembrane Liner Cap: Exhibit C-2 includes a narrative description of the Asphalt Pavement / Geomembrane Liner Cap as follows:

(A) Description of the engineering control;

(B) The objective of the engineering control; and

(C) How the engineering control is intended to function.

iii. Exhibit C-3: Concrete / Geomembrane Liner Cap: Exhibit C-3 includes a narrative description of the Concrete / Geomembrane Liner Cap as follows:

(A) Description of the engineering control;

(B) The objective of the engineering control; and

(C) How the engineering control is intended to function.

iv. Exhibit C-4: Vegetative / Geomembrane Liner Cap: Exhibit C-4 includes a narrative description of the Vegetative / Geomembrane Liner Cap as follows:

(A) Description of the engineering control;

(B) The objective of the engineering control; and

(C) How the engineering control is intended to function.

13. SIGNATURES. IN WITNESS WHEREOF, Owner has executed this Deed Notice as of the date first written above.

ATTEST:

Bayfront Redevelopment, LLC

Maria Kaouris

By William J. Hague

Maria Kaouris -

[Signature]

[Print name and title] Remediation manager Signature Director

STATE OF NEW JERSEY SS.:
COUNTY OF HUDSON

I certify that on April 1st, 2015, Maria Kaouris personally came before me, and this person acknowledged under oath, to my satisfaction, that:

(a) this person is the Remediation Manager of Honeywell International Inc., of which Bayfront Redevelopment, LLC, the corporation named in this document, is a wholly owned subsidiary;

(b) this person is the attesting witness to the signing of this document by the proper corporate officer William J. Hague who is Director of Remediation Design & Construction for Honeywell International Inc, of which Bayfront Redevelopment LLC is a wholly owned subsidiary;

(c) this document was signed and delivered by the corporation as its voluntary act and was duly authorized;

(d) this person knows the proper seal of the corporation which was affixed to this document;

(e) this person signed this proof to attest to the truth of these facts.

Cheryl L. Toles

[Signature]

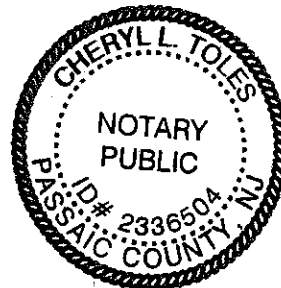
Cheryl L. Toles
[Print name and title of attesting witness]

Signed and sworn before me on April 1, 2015

Cheryl L. Toles

, Notary Public

Cheryl L. Toles
[Print name and title]



Record and Return to:
Annette M. Wall, Senior Paralegal
Gibbens P.C.
One Gateway Center
Newark, New Jersey 07102

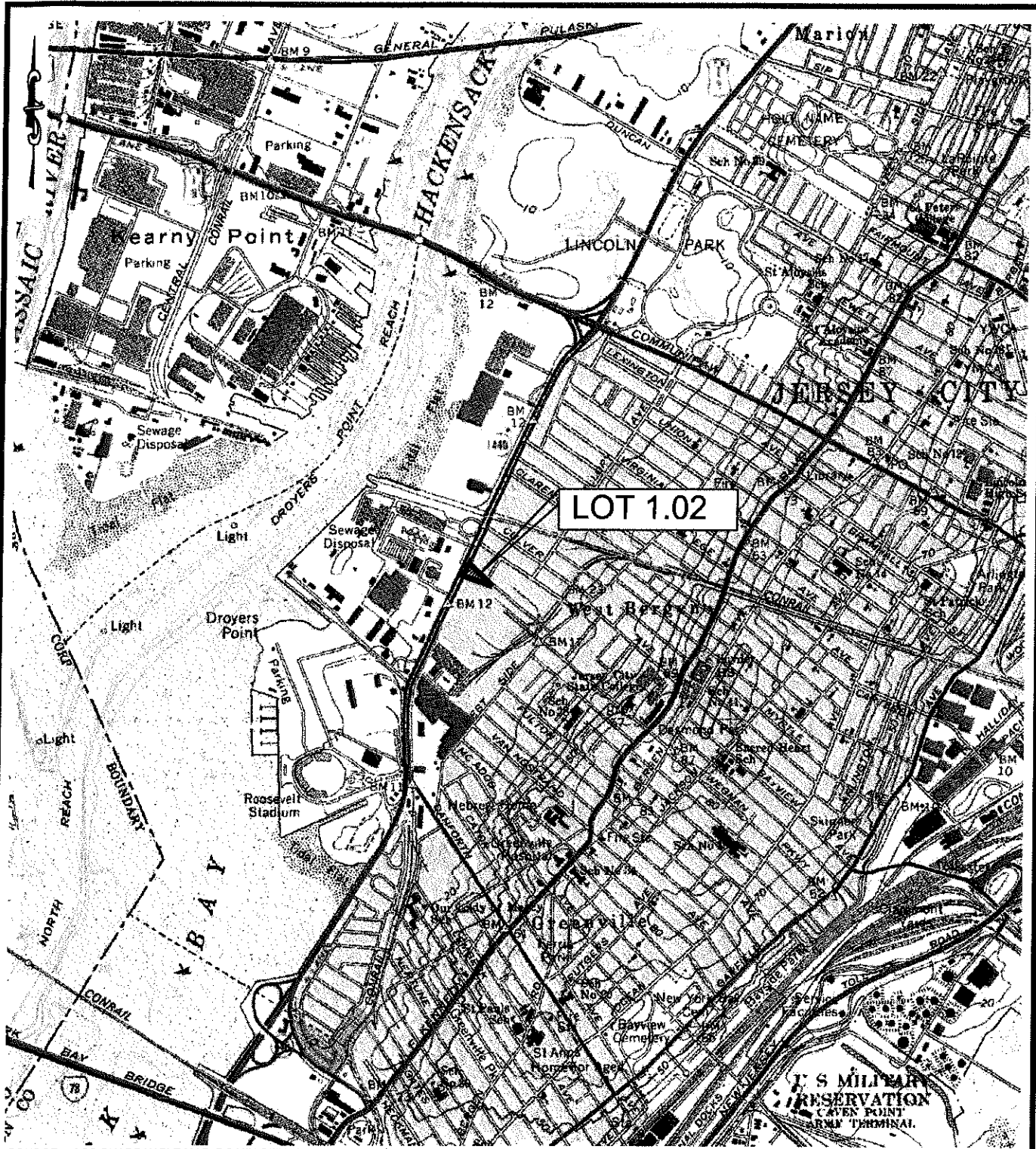
Exhibit A

A-1: Vicinity Map

A-2A: Metes and Bounds Description

A-2B: Tax Map of Lots and Blocks

A-3: Property Map



SOURCE: USGS QUADRANGLE MAP, 7.5 MIN SERIES
JERSEY CITY, NJ-NY 1967, PHOTO REVISED 1981

NOTE:
REFER TO OTHER EXHIBIT FIGURES FOR DETAILS

0 2000 4000
SCALE IN FEET

AMEC PROJ No.: 3480050361
DRAWING: 3480050136-6100-A1VM-0000

PREPARED/DATE: STR 02/15/13
CHECKED/DATE: US 02/18/13

amec
ENVIRONMENT & INFRASTRUCTURE
200 AMERICAN METRO BLVD, SUITE 113
HAMILTON, NEW JERSEY 08619

EXHIBIT A-1
VICINITY MAP
DEED NOTICE
BLOCK 26101, LOT 1.02
SA 5 - SITE 117 FORMER RYERSON STEEL
JERSEY CITY, NEW JERSEY

Exhibit A-2A

Metes and Bounds Description

All that certain lot, tract or parcel of land situate, lying and being in the City of Jersey City, in the County of Hudson and the State of New Jersey, designated as Proposed Lot 1.02 as shown on a map entitled "Minor Subdivision Plat for Bayfront Redevelopment, LLC, Lot 1 Block 26101 (Formerly Block 1285.05), City of Jersey City, Hudson County, New Jersey" prepared by Maser Consulting, P.A. dated September 9, 2011, last revised April 2, 2012, being a portion of Lot 1, Block 26101 (formerly Block 1285.05), and being more particularly bounded and described as follows, to wit:

BEGINNING at the intersection of the Easterly line of Block 21902, Lot 1, (lands now or formerly of Bayfront Redevelopment LLC, as shown on the aforementioned minor subdivision plat, said lands also being lands formerly of the Morris Canal Banking Company as recited in a deed from DDR Southeast Jersey City, L.L.C., to Jersey City Fields, LLC, dated September 12, 2008 and recorded in the Hudson County Clerk's Office on September 18, 2008 in deed book 8611, page 257), with the division line between Block 26101 (formerly Block 1285.05) Lot, 1 and Block 21902 Lot 13 and running; thence—

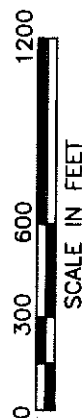
1. **S 49°06'18" E, 385.30 feet** along said division line to a point of cusp, being the eastern most corner of the herein described parcel, thence —

Running through said Lot 1, along the proposed subdivision line as laid down on the aforementioned minor subdivision plat, the following two (2) courses:

2. Along a non-tangent arc to the left having a radius of **470.00'**, and arc length of **157.65'** (central angle of **19°13'05"**), said arc being connected by a chord bearing **N 58° 42'51" W**, a chord distance of **156.91** to a point of tangency, thence -
3. **N 68°19'24" W, 214.57 feet**, to the intersection of the same with the aforementioned Lot 1, Block 21902 easterly line, thence —
4. **N 24°46'42" E, 100.78 feet**, along said easterly line to the Point and Place of **BEGINNING**.

CONTAINING: 15,152 square feet / 0.347 acres of land more or less.

The foregoing description was prepared by the undersigned Land Surveyor for the firm of Maser Consulting P.A., and is based upon the above described minor subdivision plat.



SCALE IN FEET

EXHIBIT A-2B
TAX MAP

BLOCK 26101, LOT 1.02
SA-5 SITE 117 FORMER RYERSON STEEL
JERSEY CITY, NEW JERSEY



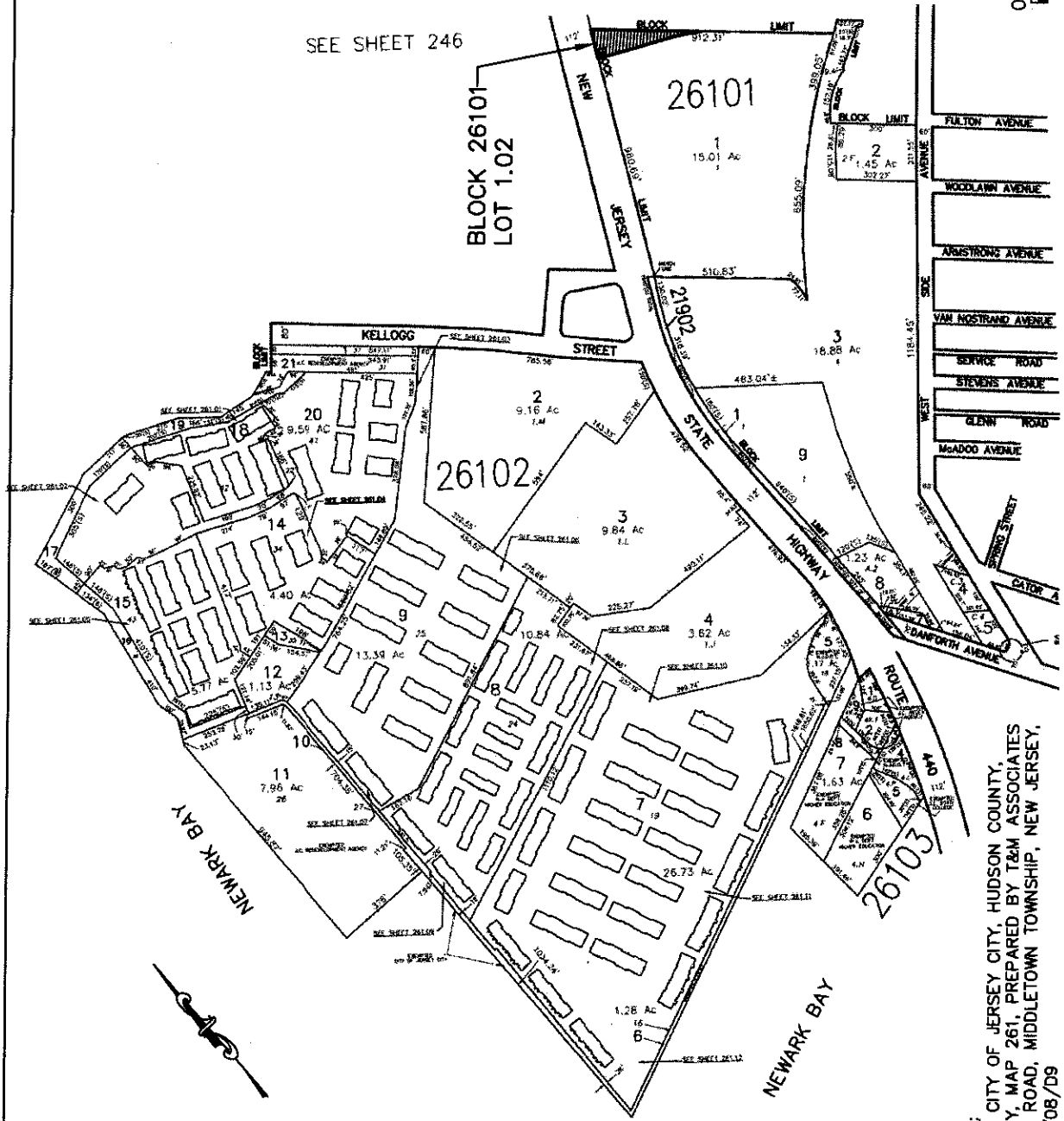
ENVIRONMENT & INFRASTRUCTURE
200 AMERICAN METRO BLVD, SUITE 113
HAMILTON, NEW JERSEY 08619

AMEC PROJ No.: 3480050361
DRAWING: 3480050136-6100-A21M-0000

PREPARED/DATE: STR 02/15/13
CHECKED/DATE: US 02/18/13

REV	DATE	STATUS	DESIGNED BY	CHECKED BY

REFERENCE:
"TAX MAP" CITY OF JERSEY CITY, HUDSON COUNTY,
NEW JERSEY, MAP 261, PREPARED BY T&M ASSOCIATES
11 TINDALE ROAD, MIDDLETOWN TOWNSHIP, NEW JERSEY,
DATED 05/08/09



SIGN
UTILITY POLE
SURVEY PIN

SANITARY MANHOLE
STORM MANHOLE
WELL
ELECTRIC MANHOLE

GAS VALVE
CATCH BASIN
SPOT ELEVATION
TREE/BRUSH LINE

EXISTING BUILDING
BM/A FORCEMAIN
LOT LINE
FENCE LINE
CONCRETE CURB

○ SET PIN
AND CAP

⑤

⑤



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⑤ 2

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77

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9



100

X

[illegible]

PLAN VIEW



300
150
SCALE IN FEET

amec

ENVIRONMENT & INFRASTRUCTURE
200 AMERICAN METRO BLVD, SUITE 113
HAMILTON, NEW JERSEY 08619

AMEC PROJ No.: 3480050361
DRAWING: 3480050136-6100-A3PM-0000

PREPARED/DATE:
STR 02/19/13

EXHIBIT A-3
PROPERTY MAP
BLOCK 26101, LOT 1.02
SA 5 - SITE 117 FORMER RYERSON STEEL
JERSEY CITY, NEW JERSEY

Exhibit B

Exhibit B-1A: Restricted Areas and Engineering Control Location Map

Exhibit B-1B: Engineering Control As-Built Diagrams

Exhibit B-2: Restricted Area Map and Data Table - Total and Hexavalent Chromium

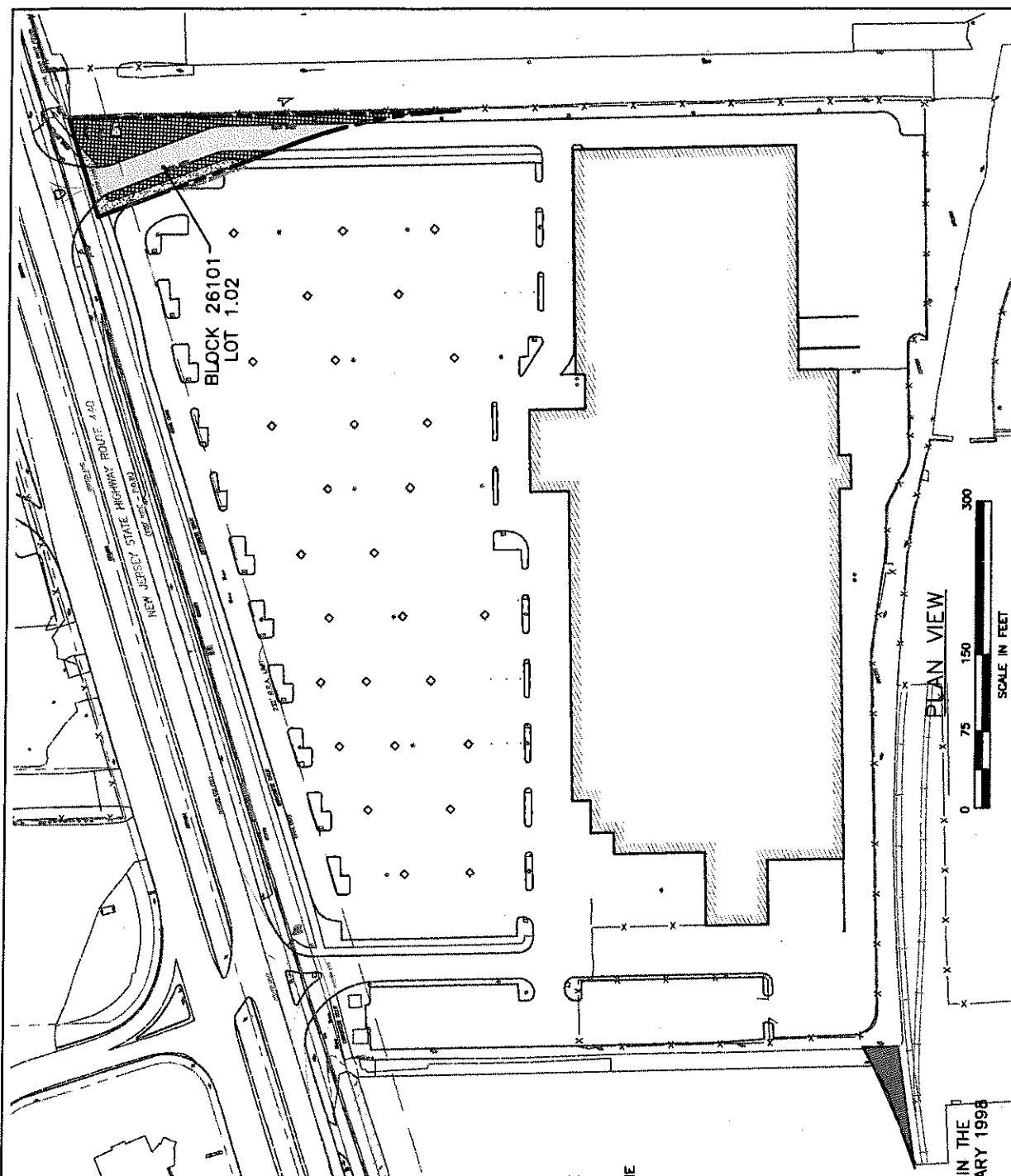


EXHIBIT B-1A
RESTRICTED AREA AND ENGINEERING
CONTROL LOCATION MAP
BLOCK 26101, LOT 102
SA 5 - SITE 117 FORMER RYERSON STEEL
JERSEY CITY, NEW JERSEY

amec

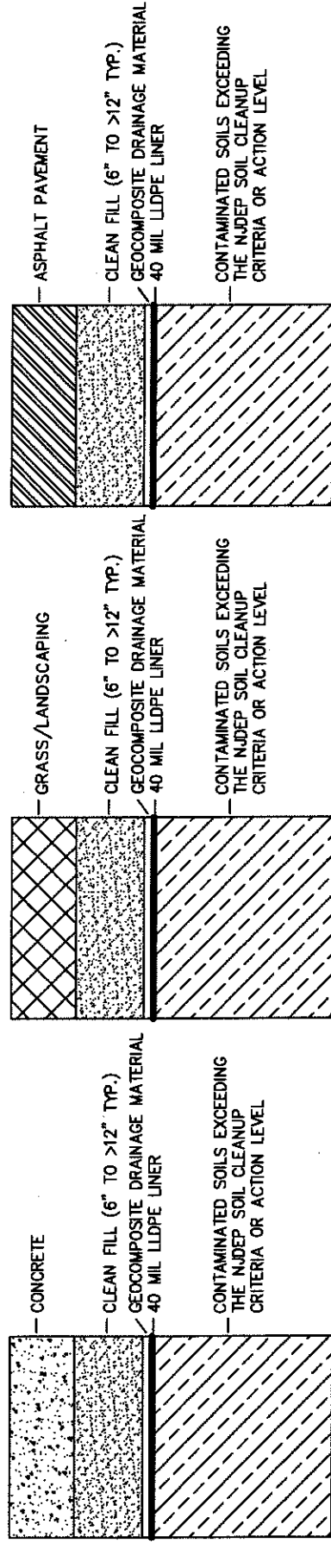
ENVIRONMENT & INFRASTRUCTURE
200 AMERICAN METRO BLVD, SUITE 113
HAMILTON, NEW JERSEY 08619

AMEC PROJ No.: 3480050361
DRAWING: 3480050136-6100-B1EC-0000

PREPARED/DATE: STR 02/19/13	CHECKED/DATE: US 02/19/13
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[illegible]

REFERENCE
ENGINEERING CONTROLS ARE DESCRIBED IN THE
REMEDIAL ACTION REPORT DATED FEBRUARY 1998
PREPARED BY ENVIRO-SCIENCES, INC.



CONCRETE/GEOMEMBRANE
LINER CAP

VEGETATIVE/GEOMEMBRANE
LINER CAP

ASPHALT
PAVEMENT/GEOMEMBRANE
LINER CAP

REV	DATE	STATUS	DRN	BY

AMEC PROJ No.: 3480050361
DRAWING: 3480050136-6100-B1EC-0000

PREPARED/DATE:
STR 03/19/13

CHECKED/DATE:
US 03/19/13



ENVIRONMENT & INFRASTRUCTURE
200 AMERICAN METRO BLVD, SUITE 113
HAMILTON, NEW JERSEY 08619

EXHIBIT B-1B
ENGINEERING CONTROL AS-BUILT DIAGRAM
BLOCK 26101, LOT 1.02
SA 5 - SITE 117 FORMER RYERSON STEEL
JERSEY CITY, NEW JERSEY

Exhibit C

C-1: Deed Notice as Institutional Controls C-2 through 4: Engineering Controls

Former Ryerson Steel / Mutual Chemical Site – NJDEP Chromium Site 117
Block 26101, Lot 1.02
Jersey City, New Jersey 07305

Exhibit C-1 includes a description of the deed notice as institutional control including monitoring and reporting requirements.

Exhibit C-2 through 4 includes a description of engineering controls consisting of an LLDPE liner system with asphalt pavement, concrete or vegetation as a final surface cap; operations and maintenance, monitoring and reporting requirements.

Exhibit C-1

Deed Notice as Institutional Controls

Former Ryerson Steel / Mutual Chemical Site – NJDEP Chromium Site 117
Block 26101, Lot 1.02
Jersey City, New Jersey 07305

(A) General Description:

- (1) The Property shown on Exhibit B-1A known as Block 26101, Lot 1.02 is a Restricted Area. The estimated size of the Restricted Area is approximately 0.35 acres.
- (2) Proper precautions must be taken to prevent disturbance (i.e., excavation or digging) of the engineering controls when in the Restricted Area. See subsections 7A and 7B of the Deed Notice for requirements for Alterations, Improvements, Disturbances, and Emergencies.
- (3) The restrictions will prevent contact with soils above the NJDEP Soil Cleanup Criteria or Action Levels.

(B) Description of monitoring:

- (1) Quarterly visual inspections of the Restricted Area will be conducted to document that the engineering controls are in good condition and to determine whether any disturbances of the soil in the Restricted Area may have resulted in unacceptable exposure to the soil contamination.
- (2) Quarterly visual inspections of the Restricted Area will be conducted to determine whether there have been any land use changes subsequent to the filing of this Deed Notice or the most recent biennial certification, whichever is more recent.
- (3) Quarterly visual inspections of the Restricted Area will be conducted to determine whether the current land use on the Property is consistent with the restrictions in this Deed Notice.
- (4) A review will be conducted to determine if any newly promulgated or modified requirements of applicable regulations or laws apply to the Property.
- (5) A review will be conducted to determine if any new standards, regulations, or laws apply to the site that might necessitate additional sampling in order to evaluate the protectiveness of the remedial action which includes this Deed Notice. If necessary, this additional sampling will be performed.

(C) Biennial certification items:

A monitoring report will be included in the biennial certification. Components of the monitoring report will include the following:

(1) A report of all conditions set forth in Deed Notice to document that they have been adhered to, including evaluation of any available documents created as a result of changes in land use or incidents.

(2) A report that determines whether or not the land use at the Property has remained consistent with the restrictions in the Deed Notice.

(3) A report that determines whether or not the Deed Notice continues to be protective of the public health and safety and of the environment.

Exhibits C-2 through C-4

Engineering Controls

C2: Asphalt Pavement/Geomembrane Liner Cap

C3: Concrete/Geomembrane Liner Cap

C4: Vegetative/Geomembrane Liner Cap

Former Ryerson Steel – NJDEP Chromium Site 117

Block 26101, Lot 1.02

Jersey City, New Jersey 07305

(A) General Description:

(1) Engineering controls (from the ground surface to contaminated soil) in areas of the geomembrane liner system consist of:

- a) Asphalt pavement, concrete, or vegetative surface cap followed by;
- b) A minimum of 6 inches to greater than 12 inches (typically) of clean fill material followed by;
- c) A geomembrane drainage material followed by;
- d) A 40-mil linear low density polyethylene (LLDPE) impervious geomembrane followed by;
- e) A woven felt material

(2) The objective of the Engineering Controls is to prevent direct contact with soils that are above the applicable NJDEP Soil Cleanup Criteria or Action Levels.

(3) The Engineering Controls are intended to function as a barrier to underlying soils that are above the applicable NJDEP Soil Cleanup Criteria or Action Levels.

(B) Description of the operation and maintenance:

Visual inspections of the Property will be performed quarterly to document that:

- (1) Each engineering control is in good condition and to document the integrity, operability, and effectiveness of each engineering control;
- (2) Each engineering control continues to function as designed and intended in order to protect the public health and safety and the environment;
- (3) Each alteration, excavation or disturbance of any engineering control is timely and appropriately addressed to maintain the integrity of the engineering control (also, see subsections 7A and 7B of this Deed Notice for directions on Alterations, Improvements, Disturbances, and Emergencies);

(4) The integrity of each institutional control is maintained so that the remedial action continues to be protective of the public health and safety and of the environment;

(5) Records of the inspections are maintained as listed in Deed Notice subparagraph 5A. Should the visual inspection indicate that other activities are necessary, those activities will be listed and executed; and

(6) A review of any new standards, regulations, or laws will be conducted to evaluate the protectiveness of the remedial action, which includes this Deed Notice. Should the review indicate that other activities are necessary, those activities will be listed and executed.

(C) Biennial Certification items:

The monitoring report will be included in the Biennial Certification. Components of the monitoring report will include the following:

(1) A report of all conditions set forth in Deed Notice subparagraph 2.ii to document that they have been adhered to, including an evaluation to determine whether the Engineering Controls are continuing to meet their original objectives and intended functions.

(2) A report to determine whether the Engineering Controls continue to operate as designed.

(3) A report to determine whether the Engineering Controls continue to be protective of the public health and safety and of the environment.

APPENDIX E

SUBSURFACE WORK AUTHORIZATION/DIG PERMIT FORM

SUBSURFACE WORK AUTHORIZATION FORM / DIGGING AND EXCAVATION PERMIT

Site 117 – Former Ryerson Steel

Prior to Performing Work (Completed by Site Property Owner/Tenant or Contractor)				
Project Name:				
Request Date:		Est. Start Date:		Est. Duration:
General Work Description:				
Depth of Digging/Excavation:				
Contractor Performing Work:				
Contractor Supervisor:		Phone No.:		
Site Owner/Tenant Project Contact:		Phone No.:		
Location of Work:				
Prior to Performing Work (Completed by Site Property Owner/Tenant and Honeywell)				
☐ Contact Honeywell to review proposed work activity. ☐ Provide drawings showing proposed subsurface work or design drawings (if applicable). ☐ Schedule project meeting to review proposed work and coordination with Honeywell.				
Yes ☐	☐ Does proposed work involve disturbance to engineering controls? If yes, review deed notice requirements for disturbances, restoration, notification, reporting; and confirm that workers receive and review the Worker Protection Plan.			
Yes ☐	☐ NJDEP to be notified per Deed Notice. Estimated date of notification: _____			
Field Work Phase (Prior to Digging) (Completed by Honeywell)				
1. Honeywell field oversight or contractor coordination required?		Yes ☐	- coordinate with Honeywell representative.	
		No ☐	- proceed with work/no further input from Honeywell.	
2. Will the project involve excavation and offsite disposal of chromium soils?		Yes ☐	- coordinate with Honeywell representative.	
		No ☐	- proceed with work/no further input from Honeywell.	
HONEYWELL AND SITE OWNER/TENANT APPROVAL REQUIRED TO PROCEED WITH WORK.				
Comments (Completed by Contractor, Site Owner/Tenant and Honeywell)				
Contractor Signature:		Date:		
Site Owner/Tenant Signature:		Date:		
Honeywell Signature:		Date:		

COMPLETE PAGE 1 BEFORE FIELD WORK COMMENCES

SUBSURFACE WORK AUTHORIZATION FORM / DIGGING AND EXCAVATION PERMIT

Site 117 – Former Ryerson Steel

COMPLETE THIS SECTION ONLY IF THERE ARE DESIGN OR FIELD CHANGES

Field Work Changes (Completed by Contractor, Site Owner/Tenant and Honeywell)			
IN THE EVENT OF ANY DESIGN OR FIELD CHANGES DURING WORK IMPLEMENTATION, PROVIDE A BRIEF DESCRIPTION OF DESIGN AND/OR FIELD CHANGE AND OBTAIN HONEYWELL APPROVAL TO PROCEED WITH WORK.			
Describe Changed Conditions (Completed by Contractor, Site Owner/Tenant and Honeywell)			
Contractor Signature:		Date:	
Site Owner/Tenant Signature:		Date:	
Honeywell Signature:		Date:	

COMPLETE THE SECTION BELOW AFTER WORK IS COMPLETE

Post-Work Phase/Closeout Requirements (Completed by Contractor, Site Owner/Tenant and Honeywell)			
Actual Start Date:		Actual Finish Date:	
Actual NJDEP Notification Date:		NJDEP Incident Number:	
☐ 1. Compile representative photographs showing work progress, restoration of engineering controls.			
☐ 2. Prepare as-built figure or other appropriate drawing(s) showing work area, relevant site features.			
☐ 3. Prepare and submit deed notice disturbance report.			
HONEYWELL AND SITE OWNER/TENANT SIGN-OFF REQUIRED AT COMPLETION OF WORK.			
Comments (Completed by Contractor, Site Owner/Tenant and Honeywell)			
Contractor Signature:		Date:	
Site Owner/Tenant Signature:		Date:	
Honeywell Signature:		Date:	