MALCOLM PIRNIE

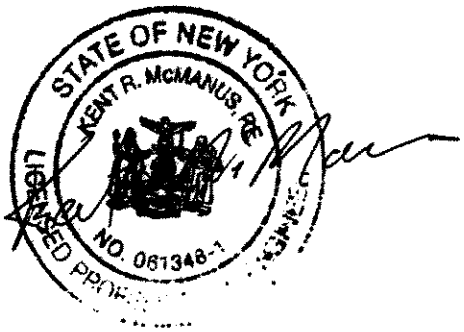
REMEDIAL ACTION REPORT
CERTAINTEED SITE

PORTIONS OF HANNA FURNACE – PARCELS 1 AND 2

VOLUME 1 OF 2

Prepared for:

KROG USC ASSOCIATES I, LLC



May 2005

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Introduction

SECTION 1

1.1 Background

The Hanna Furnace Site is a vacant industrial property currently owned by the Krog USC Associates I, LLC (Krog). The site surrounds the eastern portion of the Union Ship Canal, and encompasses approximately 113 acres, including the Former Railroad Yard (Parcel 1), which comprises approximately 43 acres, and the Former Manufacturing Area (Parcel 2), which comprises approximately 29 acres. The Hanna Furnace Site is now part of the Buffalo Lakeside Commerce Park. In 2004, Krog, in conjunction with Certain Teed Corporation (Certain Teed), began redevelopment of a portion of the site in accordance with Voluntary Cleanup Agreements dated January 2, 2003 and January 6, 2003 and site-specific Remedial Action Work Plans prepared for Parcel 1 (Malcolm Pirnie, 2002) and Parcel 2 (OB&G, 2002). Construction activities began at the site on December 3, 2003 and were completed by January 7, 2005, including site clearing and regrading, cover system installation, and facility construction. The construction contractor demobilized from the site the week of January 3, 2005.

1.2 Purpose and Scope

The purpose of this report is to certify that the cover system and other site facilities were constructed in accordance with the approved drawings, specifications, the Voluntary Cleanup Agreements, and the Remedial Action Work Plans. Additionally, the report presents the observations and data collected during the construction. Specifically, this Remedial Action Report provides:

- Daily construction logs.
- Field and laboratory test results.

- Record drawings of the completed project incorporating changes made to the design during construction.
- Photographs depicting major project aspects.
- Survey Drawings.
- Additional information supporting the construction's conformance with the Voluntary Cleanup Agreements and Remedial Action Work Plans.

This report also incorporates information required by the NYSDEC Department of Environmental Remediation's (DER) Draft Technical Guidance for Site Investigation and Remediation (DER-10). This information is organized as follows:

ITEM	SECTION LOCATION
1. Summary of the remedy	Section 1.5
2. Summary of remedial action completed, including deviations	Section 2 and Section 5
3. List of remediation standards applied	Section 3.2
4. Data tables and figures documenting the remedial action completion, including soil volumes	Appendices and Section 6
5. Detailed description of the site restoration activities	Section 3
6. Detailed description of source and quality of fill	Section 3.4 and 3.5
7. Detailed report of actual costs, including bid tabulations and change orders, if any State funding was provided	Not applicable
8. "As-built" drawings	Section 6
9. Fully executed manifests documenting any off-site transport of waste material	Section 2.1 and Appendix A
10. Filed copy of engineering or institutional controls that are required	To be submitted under separate cover
11. The Operation, Maintenance and Monitoring Plan	Section 7

1.3 Site History

The Hanna Furnace Site is a vacant industrial property currently owned by the Krog. The site surrounds the eastern portion of the Union Ship Canal, and encompasses approximately 113 acres, including the Former Railroad Yard (Parcel 1), which comprises approximately 43 acres, and the Former Manufacturing Area (Parcel 2), which comprises approximately 29 acres. The location of the site is shown on Figure 1-1. The Hanna Furnace Site has been characterized during several previous investigations. Based on the findings of those investigations together with the size of the parcel, its historic use, and the City's current developmental needs and plans, the Hanna Furnace Site has been subdivided into four parcels for developmental considerations (Figure 1-2). The Former Railroad Yard has been designated Parcel 1. Parcel 2 is comprised of the Former Manufacturing Area. Parcel 3 consists of an area surrounding the Union Ship Canal approximately 200-feet wide on each side. Parcel 4 includes the Former Filter Cake/Flue Ash Disposal Area located to the north of the Union Ship Canal. This Remedial Action Report has been created specifically for the development activities associated with the Certain Teed facility located on portions of Parcels 1 and 2.

The Buffalo Union Steel Corporation purchased the manufacturing area and the railroad yard portions of the site in 1900. The Union Ship Canal was constructed near the northern edge of the Buffalo Union Steel property in 1910 to service the facility. Pig iron manufacturing commenced during the period of 1900 to 1915 with the construction of the blast furnaces. Following the construction of the blast furnaces, the Hanna Furnace Company acquired the property from Buffalo Union Steel. The National Steel Company subsequently purchased the property in 1929, and the corporate entity became known as the Hanna Furnace Corporation. During peak production, the Hanna Furnace Corporation employed over 800 personnel.

Iron ore, lime, coke and other raw materials were received via the canal, and were stockpiled along the northern and southern edges of the canal. It is likely that these raw materials were also shipped to the site on rail cars that were temporarily stored in the railroad yard. Additionally, the pig iron manufactured at the site was transported to customers via the network of railroad yards and railroads at and near the site.

The Hanna Furnace Corporation ceased all operations in 1982.

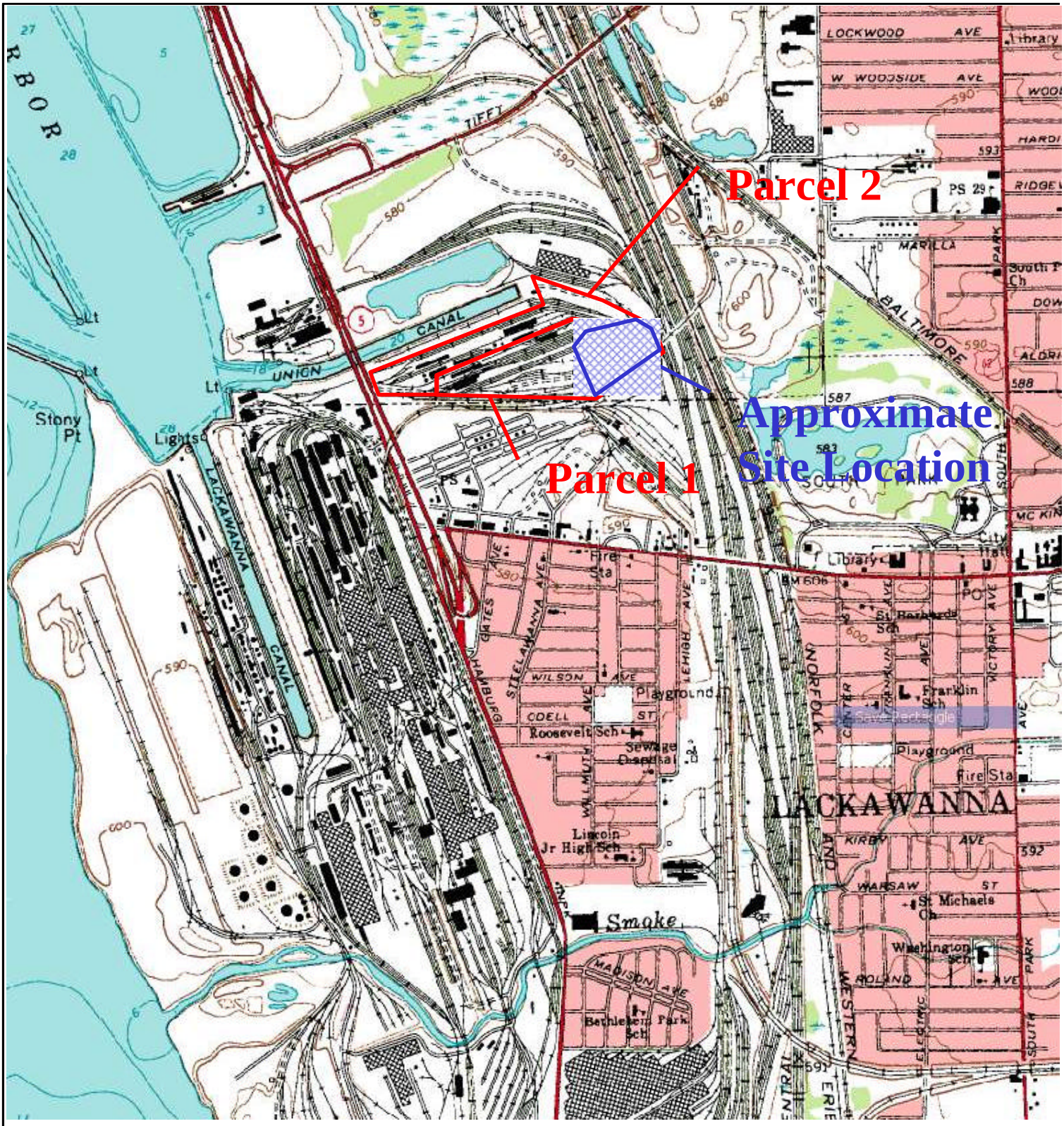

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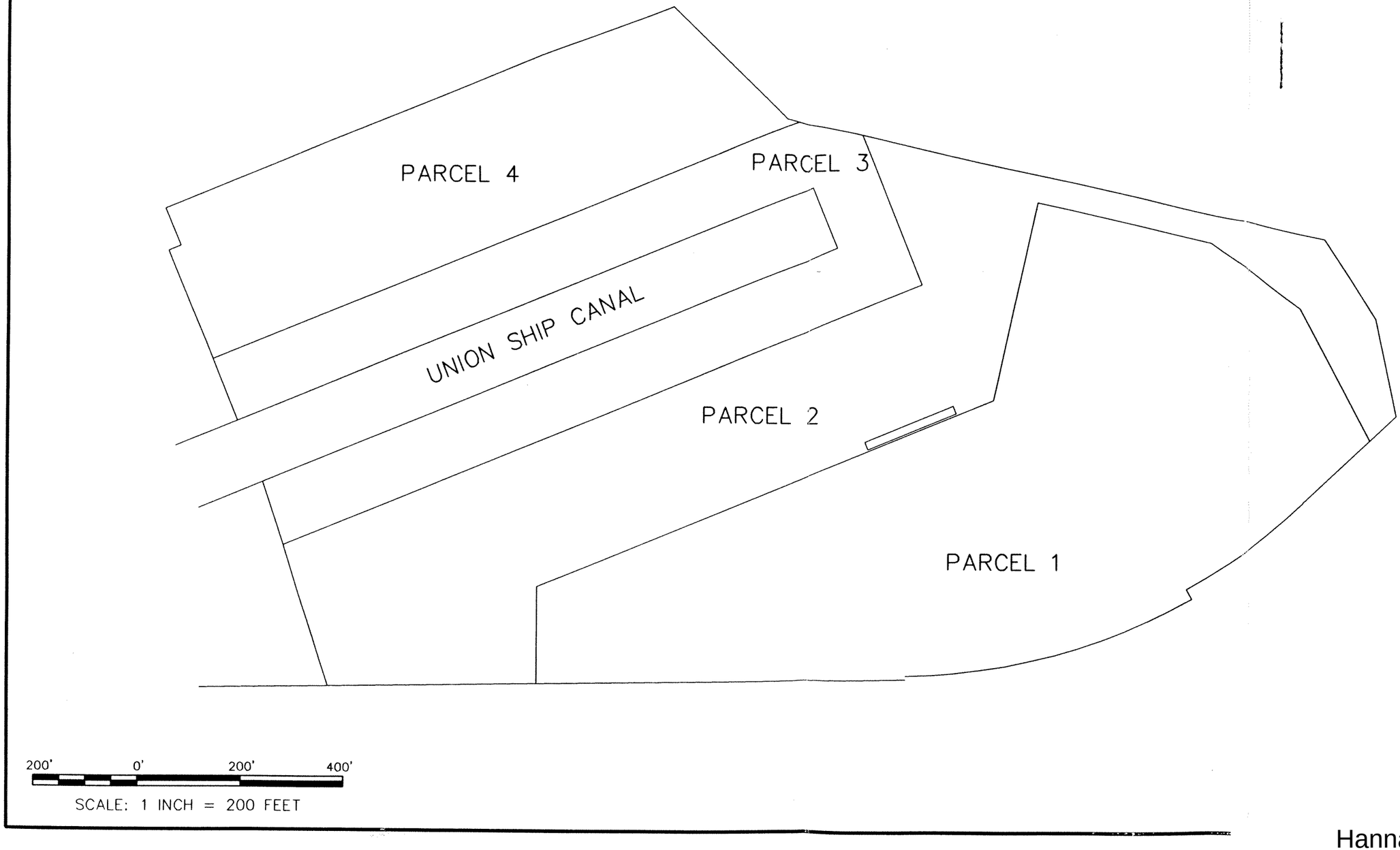
FIGURE 1-1
SITE LOCATION MAP



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Hanna Furnace Site

Figure 1-2
Parcel Map

The Jordan Foster Scrap Corporation purchased the site in 1983 and subsequently dismantled many of the buildings and removed the rails from the Former Railroad Yard for scrap. The Jordan Foster Scrap Corporation filed for bankruptcy during 1986, and leased the site briefly to the Equity Scrap Processing Company. In 1998, the City of Buffalo gained title to the Hanna Furnace Site due to nonpayment of taxes. The Hanna Furnace Site was essentially unoccupied and unsecured from 1986 to 2002, when remedial action was initiated at the site.

Currently, Parcels 1 and 2 are part of the Buffalo Lakeside Commerce Park and are subject to a Voluntary Cleanup Program and Voluntary Cleanup Agreements with Downtown Development, Inc. and Krog. Krog submitted a Brownfield Cleanup Program (BCP) Application to the NYSDEC to participate as a volunteer in the BCP to develop a 275,600 square foot manufacturing facility on 25 acres of Parcels 1 and 2. Construction activities began at the site on December 3, 2003 and were substantially completed by January 7, 2005, including site clearing and regrading, cover system installation, and facility construction.

1.4 Constituents of Potential Concern

In 1983, the NYSDEC added the Hanna Furnace Site to its Registry of Inactive Hazardous Waste Disposal Sites, as a class "2a" site. Class 2a means there was insufficient data to properly characterize potential issues at the site. Subsequently, several environmental studies were performed and, in 1995, the NYSDEC concluded:

- The site's soil and fill contained metals and semi-volatile organic compounds at concentrations exceeding recommended soil cleanup guidance; and,
- Groundwater and surface water in the canal contained various metals and phenols at levels exceeding water quality standards.

However, because none of the soil or waste exhibited any of the characteristics of hazardous waste, State regulations required that the Hanna Furnace site be removed from the NYSDEC Registry.

To fulfill the requirements of the Voluntary Cleanup Agreement, the City of Buffalo conducted more extensive sampling of Parcel 1 and 2 between 1999 and 2001. This sampling identified Contaminants of Potential Concern (COPCs) in the surface and

subsurface soils, and fill material. The COPCs included semi-volatile organic compounds (e.g., PAHs); metals (e.g., arsenic, lead, and zinc); cyanide; and petroleum-related non-aqueous phase liquid (NAPL), located in shallow soils in two general areas of Parcel 2. The location of the Certain Teed facility was not in an area with known impacts from NAPL. In addition, the pH of the groundwater in the western half of Parcel 1 was identified as a concern, measuring as high as 12. The elevated pH was attributed to the presence of lime that was used as a raw material in the iron manufacturing process.

The January 2001 report concluded that that the primary exposure pathway for contaminants at the site was via direct contact with the contaminated soils and fill. Analysis indicated that the contaminants did not readily leach or release to the groundwater. With the possible exception of pH, the groundwater was not significantly impacted; groundwater is not used at the site and therefore no direct contact with the groundwater is anticipated except during invasive construction activities.

1.5 The Cleanup Plan

The Remedial Action Objective (RAO) for the site was based primarily on the human health and environmental risks posed by the site as identified in the Qualitative Risk Assessment (Malcolm Pirnie, 2000). Because VOCs were not detected above the Site-Specific Action Levels (SSALs) in the samples collected in Parcels 1 or 2, the primary exposure pathway for contaminants at the site is via direct contact. The RAO was to minimize potential exposure risks associated with direct contact with on-site soil/fill material and groundwater.

Remedial Action Work Plans (Malcolm Pirnie, 2002 and OB&G, 2002) were prepared to develop a clean-up plan for the site. The remedial action alternative chosen for the site was the installation of a cover system directly on top of the regraded soil/fill material. In addition, NAPL-impacted soils from Parcel 2 were to be removed and either treated on-site or disposed of at a permitted off-site disposal facility. The cover system was designed to include vegetated soil cover for areas of low use, asphalt for roadways and parking lots, and concrete for side walks and areas that will become slab-on-grade structures. Surface coverage over the entire parcels, or redeveloped portions thereof, was required as a pre-condition of occupancy. In addition to the site cover system the Remedial Action Work Plans include Citizen Participation Plans and Soil/Fill Management Plans and outlines the requirements for an Operation, Monitoring and

Maintenance (OM&M) Work Plan to be developed to ensure long-term viability of the cover system. Site use limitations will also be in effect on the property limiting activities to commercial and light industrial use, per the Remedial Action Work Plans and Voluntary Cleanup Agreements.

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Description of Remedial Activities

SECTION 2

In order to eliminate potential exposure risks associated with direct contact of site fill material, the entire redeveloped portion of Parcels 1 and 2 was covered with a protective barrier. The cover system was placed directly on the regraded on-site fill material. A Citizen Participation Plan; Soil/Fill Management Plans; Operation, Monitoring and Maintenance (OM&M) Work Plan; and site use limitations were also implemented per the Remedial Action Work Plans and Voluntary Cleanup Agreements.

2.1 Preparation of Site Surface

Prior to the placement of the cover system, fill material and debris piles were graded to a regular topographic surface as planned for redevelopment. All trees, shrubs, stumps, debris and miscellaneous structures were either buried onsite, removed and disposed of off-site at a permitted disposal facility, or stockpiled north of the Union Ship Canal on Parcel 4 in accordance with solid waste regulations (6NYCRR Part 360, et. al.). Approximately 34.5 tons of railroad ties were encountered during site activities in the area of the Former Railroad Yard and disposed of off-site at a permitted facility. Invoices for the material removal, as well as tonnages hauled, are included in Appendix A. Excavation and handling of soil/fill material was performed in accordance with the Soil/Fill Management Plans for both parcels, included as part of the Remedial Action Work Plans.

2.2 Cover System

The cover system installed at the site consists of three components; vegetated soil, asphalt, and concrete. Each component was designed to provide adequate protection to human health and wildlife from the chemicals of potential concern, as outlined in the Risk Assessment and Remedial Action Work Plans.

A soil cover system was installed in areas that were not expected to receive significant equipment or vehicular use. The cover system installed at the site is comprised of borrow soil tested in accordance with the Soil/Fill Management Plans. As specified in the Soil/Fill Management Plans, soil cover was installed at a minimum thickness of 12 inches. In areas where trees and shrubs will be installed in the Spring of 2005, clean soil will be placed in mounds or berms with sufficient thickness above the cover soil to allow the trees and shrubs to be installed without disturbing the underlying cover soils. The contractor removed and properly disposed of borrow soil containing lumps, pockets or concentrations of clay, rubble, debris, wood or other organic material. Additional information regarding the cover system material is contained in Section 3.5 of this report.

The areas that became roads, sidewalks or parking lots were regraded to a regular surface and a minimum four-inch gravel subbase was applied over the soil/fill material, followed by a minimum two-inch layer of asphalt.

Areas that were to become slab-on-grade structures were regraded to a regular surface and a minimum four-inch gravel subbase was applied over the soil/fill material, followed by a minimum two-inch layer of concrete. An 8-mil polyethylene sheeting vapor barrier was also installed to provide additional protection for on-site workers.

2.3 NAPL Areas

During previous investigations petroleum-related NAPL was found to be present within the shallow soils of Parcel 2 in two general areas: north of the 2-story brick building and north and east of the former Oil Shack. The Parcel 2 Remedial Action Work Plan stipulated that all NAPL impacted soils were to be removed prior to development. The location of the Certain Teed facility is not in an area that had been delineated as a NAPL containing area and no NAPL impacted soils were encountered during the remedial action.

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Soil/Fill Management

SECTION 3

Soil/fill management was performed during construction activities in accordance with the Parcel 1 and Parcel 2 Remedial Action Work Plans prepared by Malcolm Pirnie (February 2002) and O'Brien & Gere (November 2002). The procedures in those plans were put in place to provide protection of human health and the environment during and subsequent to the remedial actions of the voluntary cleanup and redevelopment of site. Any disturbance, excavation, grading or other movement of soils on the site was conducted in accordance with the plans.

3.1 Excavation of On-Site Soil/Fill

Excavation of on-site soils was performed in the area of the site building and utility corridors. During excavation activities, soil/fill was inspected for visible contaminant impacts and screened for the presence of volatile organic compounds (VOCs) with a phototionization detector (PID). A PID detection limit of 10 parts per million (ppm) or greater was used to identify potentially contaminated soil/fill. Results of the organic vapor monitoring are contained in Appendix B and soil classification notes are contained in Appendix C. As summarized in Appendix B, no potentially contaminated soil/fill was identified during excavation activities. PID readings typically ranged from 0.0 ppm to 0.3 ppm with no recorded results above 1.0 ppm. As summarized in Appendix C, soils were typically described as slag material, foundry sand, cinders, or a combination of all three.

Water encountered during excavation activities was analyzed for pH as stated in the Remedial Action Work Plans. A field log of pH monitoring results is presented in Appendix D. A pH of greater than 12.5 Standard Units (S.U.) was considered hazardous, and as summarized in Appendix D, no samples met this criterion. A pH between 9 S.U.

and 12.5 S.U. was not considered hazardous, but the use of soil associated with the water was limited to below-grade on-site fill areas only. All pH results were below 12.5 S.U., and as such soils were consequently used as below-grade on-site fill material.

Due to the large quantity of groundwater encountered during construction activities, Krog requested that the groundwater collected from dewatering of excavations be discharged to the Erie County Sewer. Erie County Department of Environment and Planning (ECDEP), Division of Sewerage Management was contacted and approved the discharge of the excavation water to the Erie County Sewer District No. 6 sanitary sewer. The conditions specified in the approval are detailed in a letter from ECDEP to Krog dated March 19, 2004 (included in Appendix D). As specified in the ECDEP letter, the pH of the discharge water could not exceed 12 S.U. Groundwater was discharged to ECDEP's sanitary sewer system from February 22, 2004 to April 23, 2004. Groundwater within the pH range 6-9 was also pumped to the ground, a retention pond, or used for dust control through November 2004 when intrusive work was completed.

The elevated pH groundwater issue became a major cost factor for site redevelopment and as such, an alternative groundwater handling approach was developed. This approach included use of temporary groundwater infiltration trenches, the proposed locations of which are shown on the drawing included in Appendix D. Figure 3-1 provides the locations of the trenches that were used during CertainTeed site related construction activities. The trenches were approximately 100 feet long, 20 feet wide, and four to six feet deep. The trenches were lined with six inches of washed stone and surrounded by orange construction safety fence to limit access. Groundwater was pumped directly to these infiltration trenches without treatment to an upgradient trench at a rate that did not exceed the infiltration capacity of the trench. Conditions for and approval of the infiltration trench approach was included in NYSDEC's August 2, 2004 letter also included in Appendix D.

3.2 Soil/Fill Sampling and Analysis

Prior to excavation activities in the area of the manufacturing building and along utility corridors, Empire-Geo Services, Inc. (Empire) characterized soils located in areas of proposed excavation. Empire's characterization reports, which include descriptions of sampling protocols, subsurface conditions, testing results, sample location maps, boring

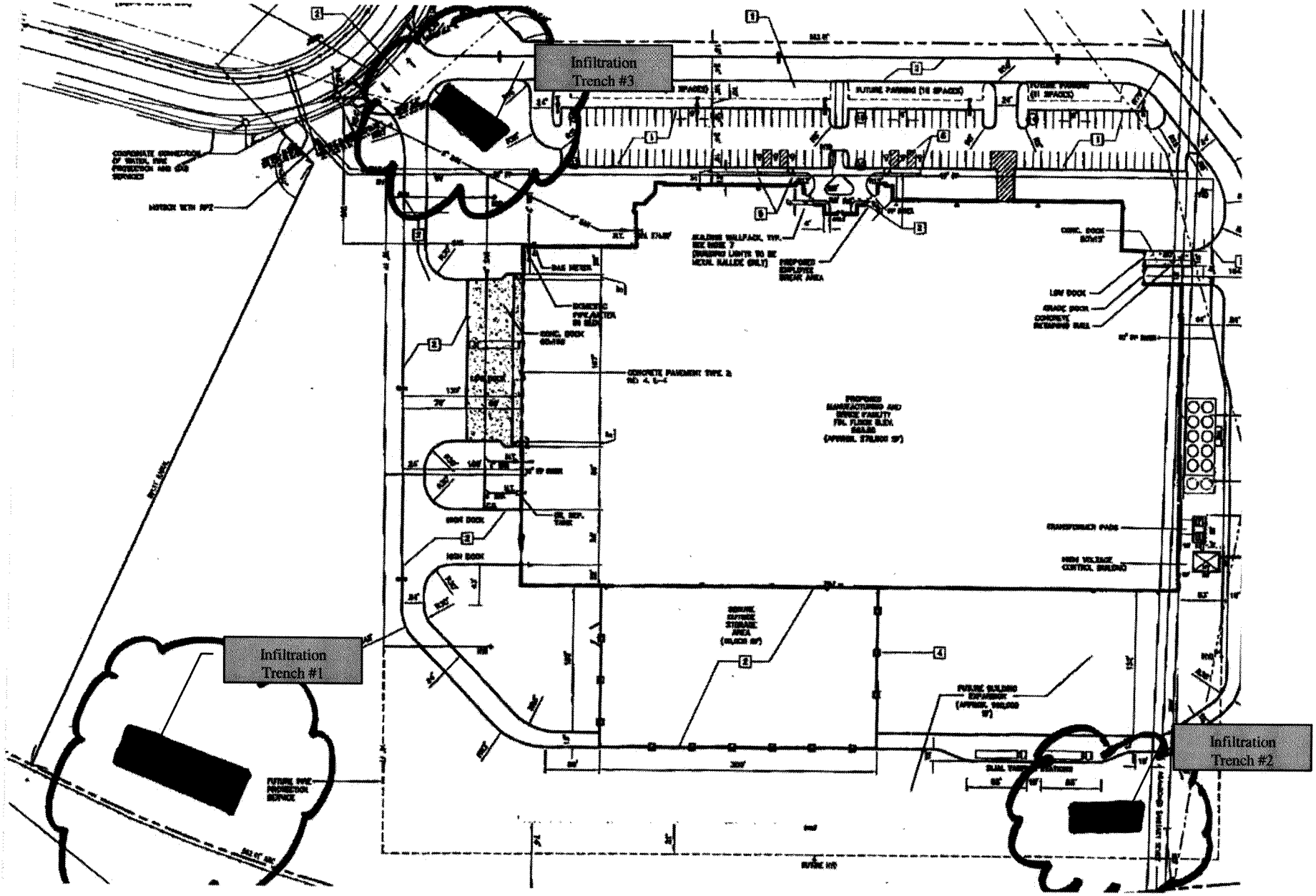

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FIGURE 3-1
GROUNDWATER INFILTRATION TRENCHES UTILIZED DURING CONSTRUCTION

logs and data validation are included in Appendix E. Soil/fill analysis results were compared to the Site-Specific Action Levels (SSALs) established in the Remedial Action Work Plans. These SSALs are also presented in the following Table 3-1.

Table 3-1: Site-Specific Action Level for Soil/Fill

Parameter	SSAL
Volatile Organic Compounds (µg/kg)	
- Total VOCs)	10,000[1]
Semi-Volatile Organic Compounds (µg/kg)	
- Total SVOCs	500,000[1,2]
Pesticides/PCBs (µg/kg)	
- Total Pesticides	10,000[1]
- Total PCBs (surface 0-1')	1,000
- Total PCBs (surface below 1')	10,000
Metals (mg/kg)	
- Arsenic	50
- Barium	500
- Cadmium	20
- Chromium	200
- Lead	1,000
- Mercury	1.0
- Selenium	50
- Silver	1,000
- Cyanide	50
pH (S.U.)	
pH triggering restricted soil/fill use	9.0 to 12.5
pH triggering "hazardous" soil/fill characterization	>12.5

1 = Total concentration is the sum of concentrations of Target Compound List (TCL) compounds plus estimated concentrations of Tentatively Identified Compounds (TICs).

2 = In addition to SSALs of 500,000 µg/kg for total concentration of SVOCs, the SSAL for each individual SVOC is 50,000 µg/kg.

3.2.1 Soil/Fill Sampling Methodology

Manufacturing Facility

Test borings were performed within the interior of the building footprint, along the building perimeter (i.e., footing location), in the area of the loading dock, and in areas designated for future expansion. The soil/fill characterization program consisted of 106 direct push borings (approximately every 50 cubic yards of proposed excavation) and

collection and laboratory analysis of three composite samples and three grab samples. The test borings were advanced to depths ranging from 2.0 to 8.0 feet below ground surface and scanned using a PID to evaluate the presence of ionizable contaminants in the soils. No PID measurements were recorded above the ambient background levels (0 ppm).

Each composite sample was taken from five individual direct push samples, and represented less than 2,000 cubic yards of proposed excavated material. The composite samples were analyzed for Target Compound List (TCL) semi-volatile compounds (SVOCs), pesticides, polychlorinated biphenyls (PCBs), pH, and several metals. In addition to the composite samples, discrete grab samples were collected for TCL volatile organic compounds. Since there were no PID hits during the screening phase, source material for the grab samples was based on collecting the most representative sample. One grab sample was collected for each 2,000 cubic yards of proposed excavated material.

The general stratigraphy encountered in the direct push borings consisted of variable fill materials underlain predominantly by silty-clay, which is generally consistent with historical site investigations. The fill soils were composed of slag fragments, ash, bricks, cinders, coal, foundry sands, crushed stone fragments, wood pieces, metal fragments, and gravelly sand and silt deposits intermixed with traces of organics. Distinct layered deposits of lime were noted in some of the borings. It was also noted that free standing water was observed in many of the borings at the completion of the sampling.

Utility Corridor

Along the utility corridors 100 borings (approximately every 50 cubic yards of proposed excavation) were similarly advanced to depths ranging from 3.0 to 8.0 feet below ground surface. Three composite soil samples were collected, as well as three grab samples. Each boring was screened with a PID at approximately 1-foot intervals. No PID measurements were recorded above the ambient background levels (0 ppm).

Each composite sample was taken from three individual direct push samples, and represented less than 2,000 cubic yards of proposed excavated material. The composite samples were analyzed for Target Compound List (TCL) semi-volatile compounds (SVOCs), pesticides, polychlorinated biphenyls (PCBs), pH, and several metals. In

addition to the composite samples, discrete grab samples were collected for TCL volatile organic compounds. Since there were no PID hits during the screening phase, source material for the grab samples was based on collecting the most representative sample. One grab sample was collected for each 2,000 cubic yards of proposed excavated material.

The general stratigraphy encountered in the direct push borings was consistent with that of the manufacturing area investigation.

Additional Sample

During excavation activities one very small area of "questionable" soil (slight visible sheen) was identified. An additional soil sample was taken of this questionable material from a trench located along the northern boundary of the facility building's foundation. The sample was collected on June 2, 2004 for analysis of VOCs, SVOCs, metals, cyanide, pesticides, PCBs and pH. Since none of the reported analytical results were above designated SSALs, the soil was handled with the other excavated material. Analytical results are included in Appendix E.

3.2.2 Soil/Fill Analysis Results

Manufacturing Facility

As previously stated, organic vapors were measured for each sample collected using a PID at approximately 1-foot intervals and on the headspace of the soil sampling jars following the direct push sampling. No PID measurements above ambient background levels (0 ppm) were detected.

Comparison of the reported analytical results for the manufacturing facility area to the SSALs indicates that the soil/fill materials analyzed were at or below the designated SSALs, with the exception of pH. The reported pH levels for Composite Samples #1 and #3 exceeded 9.0 S.U. but were below 12.5 S.U., which restricted their use under the Remedial Action Work Plans. Complete analytical results are presented in Appendix E.

Utility Corridor

As previously stated, organic vapors were measured on each sample collected using a PID at approximately 1-foot intervals and on the headspace of the soil sampling jars following the direct push sampling. No PID measurements above ambient background levels (0 ppm) were detected.

Comparison of the reported analytical results for the manufacturing facility area to the SSALs indicates that the soil/fill materials analyzed are below the designated SSALs, with the exception of pH. The reported pH levels in Composite Samples #4 through #6 exceeded 9.0 S.U. but were below 12.5 S.U., which restricted their use under the Remedial Action Work Plan. Complete analytical results are presented in Appendix E.

Additional Sample

During excavation activities one very small area of "questionable" soil (slight visible sheen) was identified. An additional soil sample was taken of suspicious material from a trench located along the northern boundary of the facility building's foundation. The sample was collected on June 2, 2004 for analysis of VOCs, SVOCs, metals, cyanide, pesticides, PCBs and pH. None of the reported analytical results were above designated SSALs. Analytical results are included in Appendix E.

3.2.3 Soil/Fill Data Validation

Laboratory data packages were generated by PSC Analytical Services for the analysis of the composite and grab samples from the manufacturing facility site and utility corridor and submitted for data validation to Data Validation Services (DVS). A Data Usability Summary Report (DUSR) was generated by DVS and included in the Soil/Fill Characterization Reports prepared by Empire (Appendix E).

The DUSR for the manufacturing facility samples concludes that sample processing was conducted in compliance with protocol requirements. Organic reporting limits were edited upward, with detected values below those adjusted levels qualified as estimated. One low level volatile detection was edited to non-detection, and one was qualified as tentative in identification. All other samples were usable as reported, or usable with minor qualification as estimated in value.

The DUSR for the utility corridor concluded that reported results were usable, although organic reporting limits were edited upward, and all of the metals results and some of the organic results were qualified as estimated in value. While results for acid analytes in the semivolatile fractions of two of the three samples were deemed not usable; the acid analytes from the semivolatile fractions that were deemed not usable have not been identified as constituents of concern (COCs) for the site. Identified site COCs are PAHs, which are base neutral extractable compounds. Therefore, the data was still considered usable for determining compliance with SSALs.

3.3 Soil/Fill Disposal Locations

Based on the analyses performed by Empire-Geo Services, Inc. (included in Appendix E) excavated soil/fill was properly disposed of off-site or used on-site as subgrade material. Conditions specified in the RAWP stated that any soil/fill with a pH higher than 12.5 was to be considered hazardous and consequently properly disposed off-site. Additionally, any soil/fill with a pH greater than 9.0 but less than 12.5 may be reused on-site but only to fill in areas below grade. The RAWP further specified that soil/fill with a pH higher than 9.0 was not to be used as backfill in utility trenches or to create berms or other above ground mounds. Based on the laboratory analytical testing performed, all soil/fill material was re-used on-site as subgrade material. None of the material was used to backfill utility trenches or create berms or aboveground mounds. The only material that was disposed off-site included approximately 34.5 tons of railroad ties, which were hauled off-site and taken to the Battaglia Trucking and Demolition transfer station located at 1037 Seneca Street, Buffalo, New York. Documentation related to off-site disposal of these railroad ties is included in Appendix A.

As previously stated all other excavated soil/fill material was used on-site as subgrade material. Map 1 in Section 6.0, Record Drawings illustrates where soil/fill was excavated from and where the spoil was re-used as subgrade material. Soil/fill was deposited in one of three designated Excess Spoil Areas (ESA); ESA #1 is located to the south-west of the manufacturing facility, ESA #2 is located to the east of the manufacturing facility and railroad spur, and ESA #3 is located to the north east of the facility. ESA #1 received soil/fill from excavations for the sanitary sewer, storm sewer, water service, facility foundation, and site cut area “A”, located on Map 1. ESA #2 received soil/fill from excavations for the loading dock, silo pad/electric area, regrind pit, and site cut area “B”.

ESA #3 received soil/fill from excavations for site cut "B". The remaining site areas were subject to minor grading and shaping only.

3.4 Subgrade Material

Subgrade material was used at the site to backfill excavations, increase site grades and provide bedding material for pipelines and other structures. The Remedial Action Work Plans stated that excavated on-site soil/fill or off-site material could be used as subgrade material if it exhibited no evidence of contamination or if analytical results indicated that no contaminants were present above the SSALs. As summarized in Section 3.2, excavated soil/fill material met this criterion was used as on-site subgrade material. Section 3.3, Soil/Fill Disposal Locations, details where the soil/fill was excavated from and where the material was moved to on-site.

Additional pipe bedding and select fill material was imported from several off-site sources. Candidate subgrade material was sampled and tested for TCL VOCs, SVOCs, pesticides, PCBs and several metals. Analytical results were compared to the SSALs and materials were only accepted for use on-site if they met those action limits. Analytical results were also compared to TAGM and did not exceed those values. Material descriptions, source locations, and analytical testing results are attached in Appendix F.

3.5 Final Cover

As a prerequisite for occupancy, the developed area of the site was completed with a final cover system, as required by the Remedial Action Work Plans. This cover system was installed to eliminate the potential for human contact with impacted fill material. Final cover at the site consists of concrete sidewalks, asphalt road and parking areas, gravel cover, areas of clean soil with vegetation, and concrete slab in building areas. Material descriptions, source locations, and analytical testing results are included in Appendix G. Final cover material was placed to meet or exceed the following conditions:

Final Cover Material	Minimum Thickness
Soil	12-inches
Asphalt/Gravel Subbase	6-inches (min)
Concrete/Gravel Subbase	6-inches (min) 8-mils polyethylene sheeting

The thickness of the final soil cover was controlled through the use of grade stakes. Prior to placement of the soil, a demarcation layer consisting of 2-inch wide yellow tape was placed on the subgrade at 50-foot grid. Grade stakes were also placed on a 50-foot grid in all directions. The soil was placed and graded using a small dozer to the minimum elevation shown on the grade stakes; a minimum of 12 inches of soil was placed in areas of the site designed as grass-covered landscape and a minimum of 3 inches of asphalt, and 4 inches of concrete with a minimum gravel subbase thickness of 3 inches, was placed in all other areas of the site.

3.6 Erosion Control

Under federal and state laws, any remedial actions at the site that require the disturbance of more than one acre of land requires that the project obtain coverage under the NYSDEC SPDES General Permit for Storm Water Discharges from Construction Activities that are classified as "Associated with Industrial Activities", Permit #GP-02-01 (Construction Storm Water General Permit). Requirements for coverage under the General Permit include submittal of a Notice of Intent form and the development of a Storm Water Pollution Prevention Plan (SWPPP). Appendix H contains the Notice of Intent associated with the Buffalo Lakeside Commerce Park – CertainTeed Project dated May 18, 2004; a letter of Acknowledgement of Notice of Intent for Coverage Under SPDES General Permit for Storm Water Discharges from Construction Activity General Permit No. GP-02-01 dated May 27, 2004; and the SWPPP prepared by Malcolm Pirnie, Inc. dated May 2004.

Erosion control measures implemented at the site and as required by the SWPPP included:

- Silt fences were strategically placed along the site boundary prior to implementation of construction activities. Silt fences served to protect both surface waters from run-off and as perimeter sediment control.

- Traversed public thoroughfares were protected from deposition of materials from construction vehicles by stabilizing construction site entrances and/or washing all vehicle wheels in safe disposal areas. Materials deposited on public thoroughfares were promptly removed.

- In addition to the silt fences, run-off and drainage was controlled by minimizing soil/fill exposure and disturbance, and restoring exposed areas that have reached final grade with seed and protecting with hay until the vegetation was established.

- The final grade of the site was constructed such that rain water was effectively drained away from the site.

- A stormwater management system was designed and implemented to provide permanent stormwater management at the site. The system is tied in to stormwater management systems designed and permitted as part of the access road and utility corridor construction projects.

Prior to the filing of the Notice of Termination (NOT), a final site inspection will be performed to certify that that site has undergone final stabilization. Based on the findings of that inspection to be conducted in the Spring of 2005, the final NOT will be filed to terminate coverage under the SPDES General Permit GP-02-01.

As specified in the RAWP, clay dams were constructed at the lateral connections to the sewer and water lines constructed at the site. These clay dams were constructed to minimize the flow of groundwater through the bedding of utilities in areas where the pH was high to a limit and mitigate the potential for migration of water with high pH from the site.

3.7 Dust Controls

Disturbed or unvegetated areas were wetted at all times with water during construction activities. Subgrade material exposed for extended periods of time was covered with tarps or planted to minimize dust generation. Particulate monitoring was performed real-time on site, and perimeter sampling was performed by SafetyWise to verify those results. Safety Wise verified that the procedures outlined in the Parcel 1 and Parcel 2 Community Air Monitoring Plans were followed. On-site weather conditions and particulate monitoring results are presented in Appendices I and J, respectively. Air monitoring results are presented in Appendix K. Several air monitoring results exceeded the action limit of 100 $\mu g/m^3$ defined in the Health and Safety Plan (Appendix L), but were below 100 $\mu g/m^3$ when background (upwind) particulate results were accounted for.

3.8 Air Monitoring

Ambient air monitoring was performed on a real-time basis during all subsurface construction activities using a PID. The results of this monitoring are included in the Daily Inspection Reports included in Appendix B. Additional monitoring was performed at the perimeter of the work area and on on-site personnel, to determine if the Occupational Safety and Health Administration's (OSHA) permissible exposure limit (PEL) was being met. Results in Appendix K indicate that on-site exposures were below the OSHA PEL for site personnel and ambient concentrations remained below the 5 ppm limit for total hydrocarbons defined in the Health and Safety Plan (Appendix L). The Work Plans' vapor emission response plan was not triggered by the air monitoring results recorded during the site activities.

3.9 Fencing and Access Control

New fencing was placed where needed during construction activities to control access to exposed soil/fill material. Access points were gaited and all City and DDI-owned gates and existing fencing was posted with "No Trespassing" signs.

3.10 Property Use Limitations

Property use limitations detailed in the Brownfield Cleanup Agreements were adhered to during the design and construction on the site. Long-term property use limitations include City zoning, land use and design guidelines, and deed restrictions. The Environmental Easement Agreement between Krog and the NYSDEC will be submitted under separate cover.

3.11 Notification and Reporting

The NYSDEC and NYSDOH were notified at least five days in advance of construction activity commencement. This Remedial Action Report has been prepared and submitted to the NYSDEC and NYSDOH within 90 days of completion of development of the site. Section 8.0 of this report contains the required certification that all work was performed in conformance with the S/FMP, with the exceptions of the deviations noted in Section 5.0 of this report.

MALCOLM PIRNIE

Citizen Participation

SECTION 4

Citizen Participation Plans (CPP) for Parcels 1 and 2 were developed by Malcolm Pirnie (February 2002) and OB&G (November 2002), respectively, to keep adjacent residents, businesses and the general public informed of the planned remediation and clean-up activities at the site. The plans were updated with project specific information when appropriate. The CPP was revised to reflect transfer of the CertainTeed Site to the Brownfield Cleanup Program (BCP) during initial construction activities and has been incorporated into this report as Appendix M. The CPP includes:

- Background information related to the site history, site investigation history, and contaminants of interest, including their SSALs.
- A description of planned Brownfield Cleanup Program (BCP) activities.
- A list of citizen participation activities that will be conducted prior to and during the site development.
- Information on whom to contact and where to get more information about the site and the planned development.
- A glossary of terms and acronyms.

The citizen participation activities performed during the cleanup activities covered by this report are outlined in Table 4-1. The Fact Sheets and are presented in Appendix M.

TABLE 4-1

CITIZEN PARTICIPATION ACTIVITIES - BROWNFIELD CLEANUP PROGRAM
HANNA FURNACE SITE - SUBPARCEL 1
CITIZEN PARTICIPATION PLAN

Activity	Activity Completion Point	Activity Completion Date
Develop Citizen Participation Plan	Once BCP Application is deemed complete by NYSDEC.	February and November of 2002
Mail Voluntary Cleanup Agreement Fact Sheet	Prior to Construction	February 2002
Mail Remedial Action Complete/Remedial Action Report Under Review Fact Sheet	When construction is complete	March 2005
Update mailing list	As needed during construction	February 2005

Documents related to the site's cleanup are maintained for public review at the NYSDEC established document repositories at the following locations:

Buffalo & Erie County Public Library
JP Dudley Branch
2010 So. Park Avenue
Buffalo, New York 14220
(716) 823-1854

NYSDEC
Region 9 Offices
270 Michigan Avenue
Buffalo, New York 14203
(716) 851-7220

MALCOLM PIRNIE

Notation of Deviations

SECTION 5

Deviations from the Remedial Action Work Plans (RAWP) for Parcels 1 and 2, and management actions taken during construction activities included the following:

- **Soil/Fill Sampling Procedure** – The RAWPs stipulate that excavated soil to be used as subgrade or excavation backfill be sampled for pH, volatile organic compounds (VOCs), Target Compound List (TCL) semi-volatile organic compounds (SVOCs) pesticides, polychlorinated biphenyls (PCBs), metals and cyanide at a rate of no less than one sample per 2,000 cubic yards of excavated soil/fill. VOC analysis was to be performed on a discrete sample and the remaining analysis was to be performed on a composite sample comprised of five separate locations. Soil/fill samples from the site were taken from soil borings that were advanced in the areas where excavations were to be performed (i.e., building footings, utility corridor). Discrete and composite samples were taken to represent every 2,000 cubic yards of estimated excavation volume. Composite samples were comprised of soil from either five (Certain Teed building area) or three (utility corridor area) borings. The sampling procedure is further detailed in the two Soil/Fill Characterization Reports prepared by Empire-Geo Services, located in Appendix E.

- **Additional Soil/Fill Sample** – During excavation activities one very small area of "questionable" soil (slight visible sheen) was identified. An additional soil sample was taken of this questionable material from a trench located along the northern boundary of the facility building's foundation. The sample was collected on June 2, 2004 for analysis of VOCs, SVOCs, metals, cyanide, pesticides, PCBs and pH. None of the reported analytical results were above designated SSALs. Analytical results are included in Appendix E.

- **Air Monitoring** – The Site Health and Safety Plans included in the RAWPs require that documentation sampling be conducted and analyzed for lead. Reisman CIH Services removed this requirement based on conversations with

David Locey of the NYSDEC. Further details of this agreement are located in Appendix K.

- **Groundwater Sewer Discharge** – Krog received a conditional approval from Erie County Sewer District No. 6 to discharge groundwater encountered during site excavation activities to the District No. 6 sanitary sewer system. Conditions for water discharge included flow rates, notification of the Lackawanna Treatment Plant, discharge point location, discharge water pH, and additional requirements detailed in an approval letter from the Erie County Department of Environment and Planning (ECDEP) dated March 19, 2004 (Appendix D).

- **Groundwater Infiltration Trenches -** The groundwater issue became a major cost factor for site redevelopment and as such, an alternative groundwater handling approach was developed. This approach included use of temporary groundwater infiltration trenches, the locations of which are shown on the drawing included in Appendix D and on Figure 3-1. The trenches were approximately 100 feet long, 20 feet wide, and four to six feet deep. The trenches were lined with six inches of washed stone and surrounded by orange construction safety fence to limit access. Groundwater was pumped directly to these infiltration trenches without treatment to an upgradient trench at a rate that did not exceed the infiltration capacity of the trench. Conditions for and approval of the infiltration trench approach was included in NYSDEC's August 2, 2004 letter also included in Appendix D.

- **Monitoring Well Decommissioning** – Monitoring well #MW-002 was decommissioned in accordance with the NYSDEC "Groundwater Monitoring Well Decommissioning Procedures".

- **Final Site Grading & Plantings -** Construction activities at the Site were substantially completed the week of January 3, 2005. The Parcel 1 and Parcel 2 RAWPs require that a grass seed mixture be applied over all areas of the site surface disturbed by construction operations and that rye seed be applied over the entire area to provide quick shade cover and to prevent erosion during turf establishment. Due to the seasonal climate at the time of substantial completion, final grading of lawn areas, installation of plantings, and application of grass seed has not been completed. This work is scheduled for the Spring of 2005.

MALCOLM PIRNIE

Record Drawings

SECTION 6

The following record drawings are included as part of this Remedial Action Report and are included in this section:

Map 1 – Grading and Spoil Plan

Map 2 – Track Section and Details

Map 3 – Subgrade Map

Map 4 – Final Grade Map

Map 5 – Final Site Plan

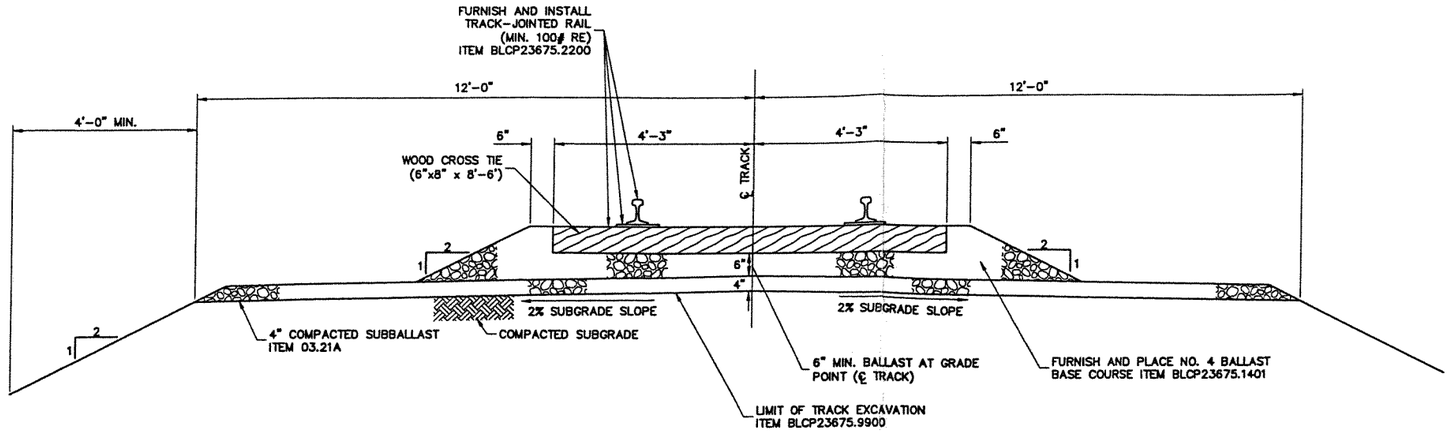
Map 6 - Sections

Detail 1 – Car Parking Areas

Detail 2 – Roadway/Truck Traffic Areas

Detail 3 – Sidewalks/Dock Area Aprons

Detail 4 – Building Slab with Vapor Barrier



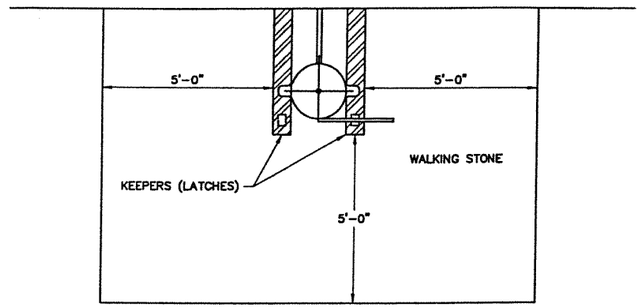
NOTES:

1. SEE GRADING PLAN FOR DITCH LOCATIONS.
2. CONTRACTOR TO VERIFY LOCATION OF ALL DITCHING WITH ENGINEER PRIOR TO WORK.

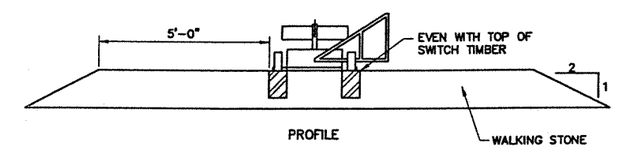
TYPICAL TRACK SECTION

N.T.S.

STA. A 1+50 TO STA. A 5+00
STA. B 0+00 TO STA. B 2+00

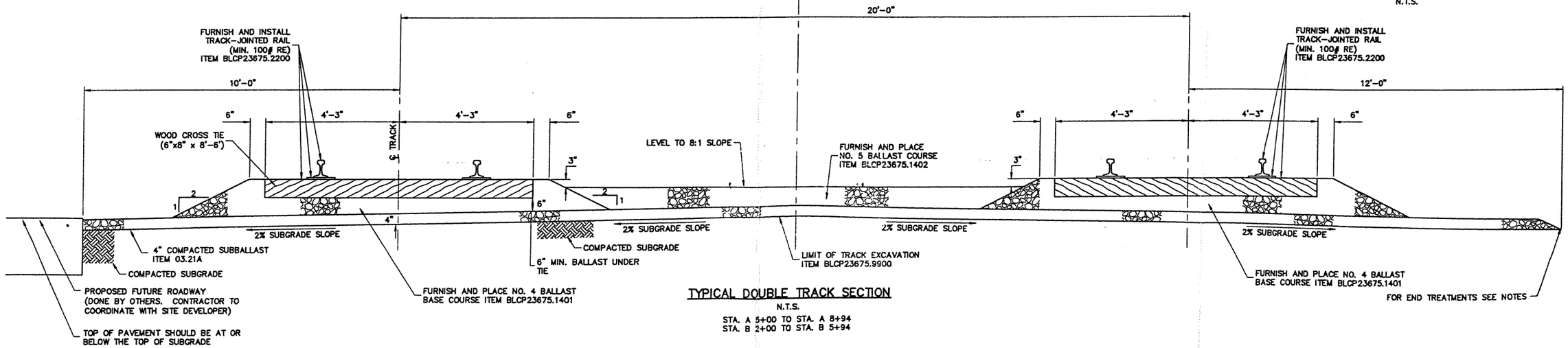


PLAN



SWITCH OR DERAIL STAND

N.T.S.



TYPICAL DOUBLE TRACK SECTION

N.T.S.

STA. A 5+00 TO STA. A 8+94
STA. B 2+00 TO STA. B 5+94

Revisions:	Drawn By:	App'd. By:	Date:

Designed By: MDJ	Date: 6/04
Drawn By: MDJ	Date: 6/04
Checked By: RJS	Date: 6/04

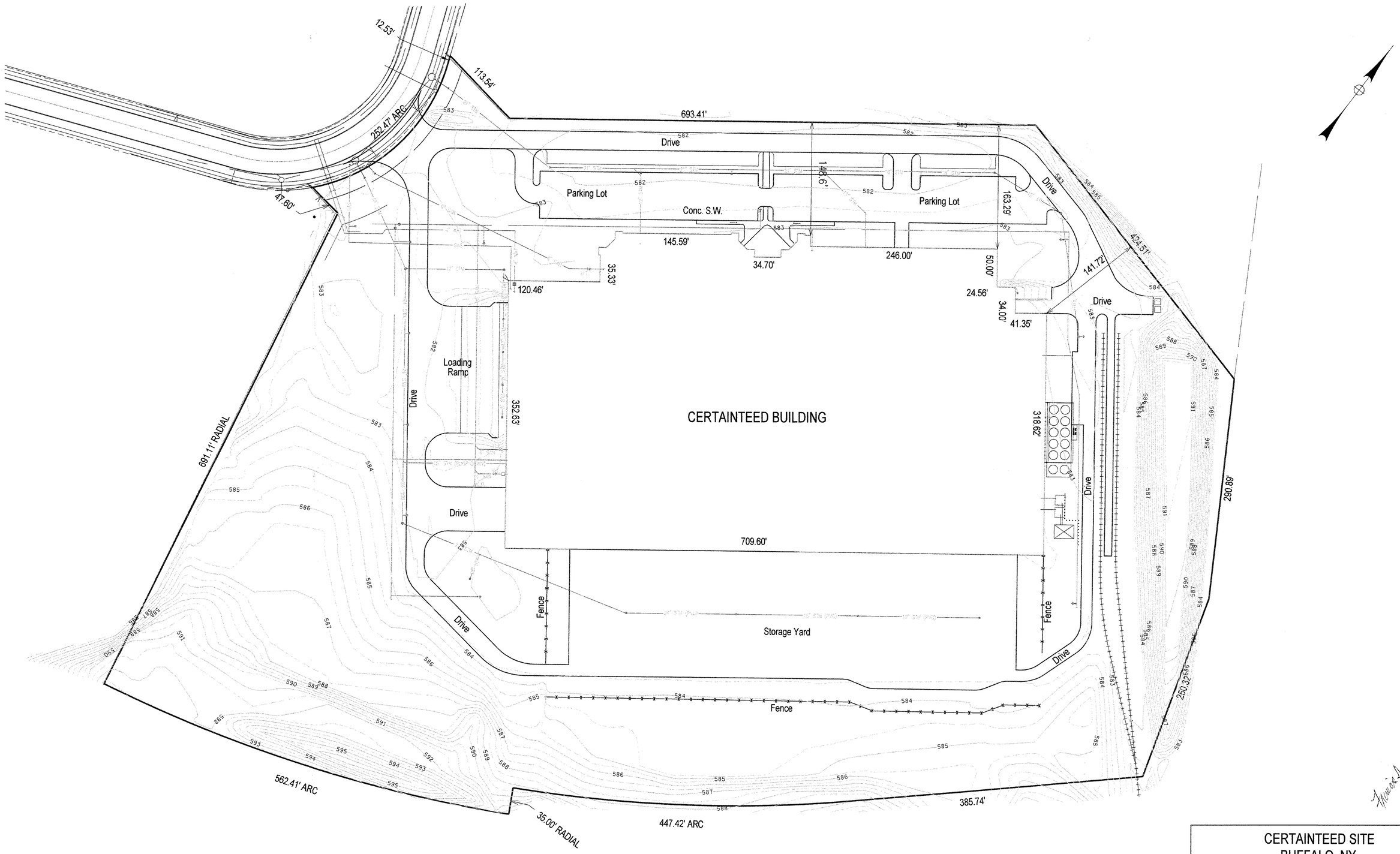
CLOUGH, HARBOUR & ASSOCIATES LLP
ENGINEERS, SURVEYORS, PLANNERS & LANDSCAPE ARCHITECTS
295 MAIN STREET, SUITE 900 Tel. 716-847-6310
BUFFALO, NEW YORK, 14203 FAX. 716-847-0123

ECIDA
The economic development corporation for Erie County

BUFFALO LAKESIDE COMMERCE PARK
PHASE II

TRACK SECTIONS AND DETAILS

Drawing No.
TR-4



I hereby certify that the contours and building location has been prepared from field measurements. In addition, this survey was prepared in accordance with the current code of practice adopted by New York State Association of Professional Land Surveyors; Niagara Frontier Land Surveyors – Chapter.

Francis J. Gannon 3/23/05

Francis J. Gannon
New York State License No. 049590

Date

0 60 120 180

SCALE IN FEET

CERTAINTEED SITE
BUFFALO, NY
FINAL GRADE

PARSONS TRANSPORTATION GROUP
ENGINEERS • PLANNERS • LANDSCAPE ARCHITECTS
SUITE 300 – 37 FRANKLIN STREET – BUFFALO NEW YORK – 14202

FILENAME	SCALE	DATE	DRAWING NO.
	1" = 60'	MARCH 21, 2005	

$FILE$
$DATE$

SITE GRADING AND DRAINAGE NOTES

1. REFER TO DETAILS 10, L-5 AND 12, L-5 FOR CATCH BASIN, AND PIPE BEDDING AND BACKFILL INFORMATION.
2. STORM PIPE SHALL BE GASKETED PVC WITHIN THE LIMITS OF THE FUTURE BUILDING EXPANSION SO THAT IT MAY REMAIN IN PLACE IF BUILDING EXPANSION OCCURS. OTHERWISE ALL STORM PIPING SHALL BE HDPE PIPE AND MEET THE REQUIREMENTS OF THE CITY OF BUFFALO

CONNECT PROPOSED STORM INTO MANHOLE AT INVERT ELEVATIONS
D-6 574.75
D-7 575.14

MH DI #1
RIM 581.50
INV 577.00

DI #1
RIM 581.50
INV 578.50

DI #2
RIM 581.50
INV 578.50

MH DI #2
RIM 581.50
W INV 578.08 21"
E INV 578.08 18"
SE INV 578.50 15"

DI #4
RIM 581.50
INV 579.00
HP 582.50

MH DI #3
RIM 581.50
INV 578.80

MH DI #4
RIM 582.20
INV 579.10

SITE CUT "B"

EXCESS SPOIL AREA #3

EAST END DOCK EXCAV. "C"

REMAINING AREAS MINOR GRADING AND SHAPING ONLY

F.F.E. 583.50

WEST DOCK EXCAV. SITE CUT "A"

SILO PAD / ELECTRIC EXCAVATION "D"

REGRIND PIT EXCAV. "E"

EXCESS SPOIL AREA #2

EXCESS SPOIL AREA #1

DI #5
RIM 582.20
INV 579.60 12"
INV 579.60 12"

DI #6
RIM 582.00
INV 579.00

MH #3
RIM 583.00
INV 576.24 12"

MH #1
RIM 582.40
INV 575.52 30"
INV 575.52 24"
INV 575.72 12"

DI #7
RIM 582.00
INV 579.00

DI #8
RIM 582.00
INV 579.00

DI #9
RIM 582.00
INV 579.00

DI #10
RIM 582.00
INV 579.00

MH #2
RIM 582.20
INV 576.20 24"

DI #13
RIM 579.35
INV 576.50

DI #14
RIM 579.35
INV 576.67

DI #15
RIM 579.35
INV 576.85

DI #16
RIM 579.35
INV 577.00

MH DI #5
RIM 582.35
INV 576.85

DI #11
RIM 582.35
INV 579.00

DI #12
RIM 582.35
INV 579.80

MH DI #6
RIM 582.35
INV 577.30 24"
INV 577.30 15"
INV 578.50 15"

SITE CUT "A" (2)

SITE CUT "B" (2)

HIGHWAY BOUNDARY

SANITARY SEWER

ABANDONED SANITARY SEWER M.H.

5' CONCRETE SIDEWALK

PROPOSED STORM SEWER SERVICE

PROPOSED 4" D.I. CEMENT LINED SERVICE CONNECTION BLIND FLANGE END OF PIPE

PROPOSED 10" D.I. CEMENT LINED SERVICE CONNECTION BLIND FLANGE END OF PIPE

PROPOSED 8" PVC SANITARY SEWER SERVICE CONNECTION

F.P. PUMP HOUSE

ROOF DRAIN

5" STM (ROOF DRAIN)

ABANDONED SANITARY SEWER

1 SITE PLAN
SCALE: 1" = 60'

LEGEND:

EXCESS SPOIL AREA #1:

- SANITARY SEWER SPOILS
- STORM SEWER SPOILS
- WATER SERVICE SPOILS
- FOUNDATION SPOILS
- SITE CUT AREA "A"

EXCESS SPOIL AREA #2:

- SITE CUT AREA "B"
- DOCK EXCAVATION "C"
- SILO PAD / ELECTRIC "D"
- REGRIND PIT EXCAV. "E"

EXCESS SPOIL AREA #3:

- SITE CUT "B"

K & associates
53 East Home Road
Orchard Park, NY 14026
716.684.6255
landscape architecture site planning 3d computer rendering

The Krog Corp.
4 Centre Drive Orchard Park, New York 14127
Ph. 667-7700 Fax. 667-1258
Contractors Engineers Developers

NO.	DATE	REVISION DESCRIPTION	BY	APPROVD
6	09-16-04	MISC. STORM LINES		
5	09-08-04	REVISED NEW ROAD AS PER C.H.A., PUMP HOUSE, UTILITIES, INVERTS		
4	06-01-04	REVISED: NEW EXT. DOOR, SILOS PAD, GAS M., RPZ, WATER M., MISC.		
3	05-10-04	REVISED: GRADING / DRAINAGE PER DRAINAGE CALCS		
2	04-02-04	REVISED BUILDING PERMIT ISSUE		
1	03-24-04	REVISED PAVING / UTILITIES		

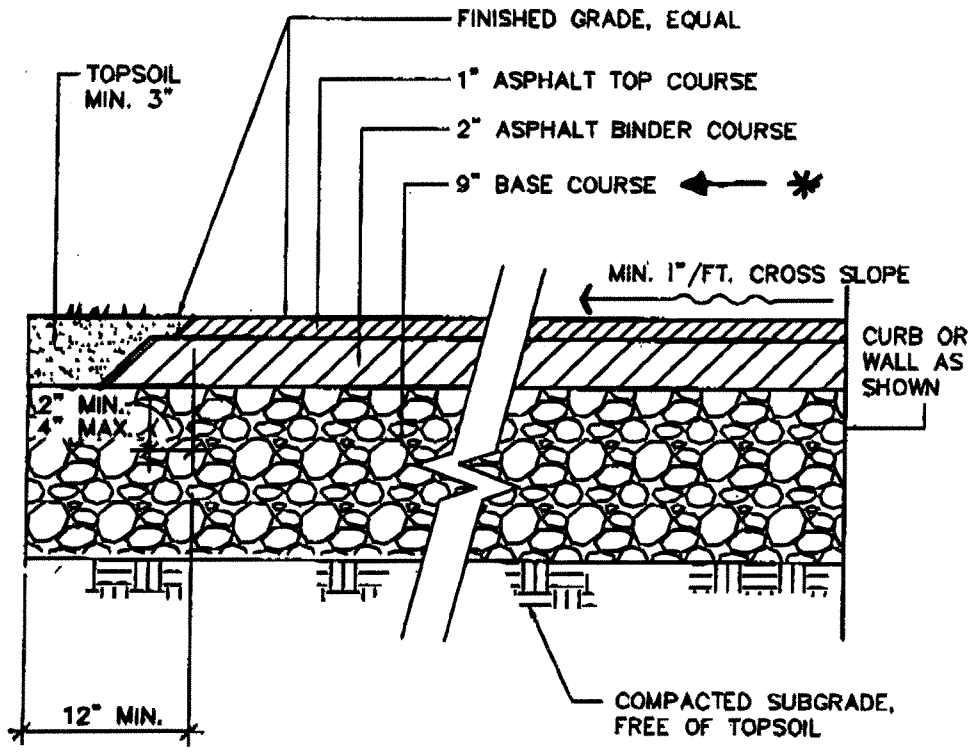
12-31-04

Proposed Manufacturing and Office Facility
CertainTeed
Union Ship Canal - Buffalo, New York

SITE GRADING AND DRAINAGE PLAN

GRADING AND SOIL PLAN

DRAWN BY:	CAR
APPROVED BY:	CAR
DATE:	10-05-03
SCALE:	AS NOTED
PROJECT NO:	03-526
WITHOUT TOPO	GSP-1
DRAWING NO:	1-2



NOTE:
* DIMENSIONS GIVEN ON PLAN ARE TAKEN FROM EDGE OF ASPHALT TOP COURSE.

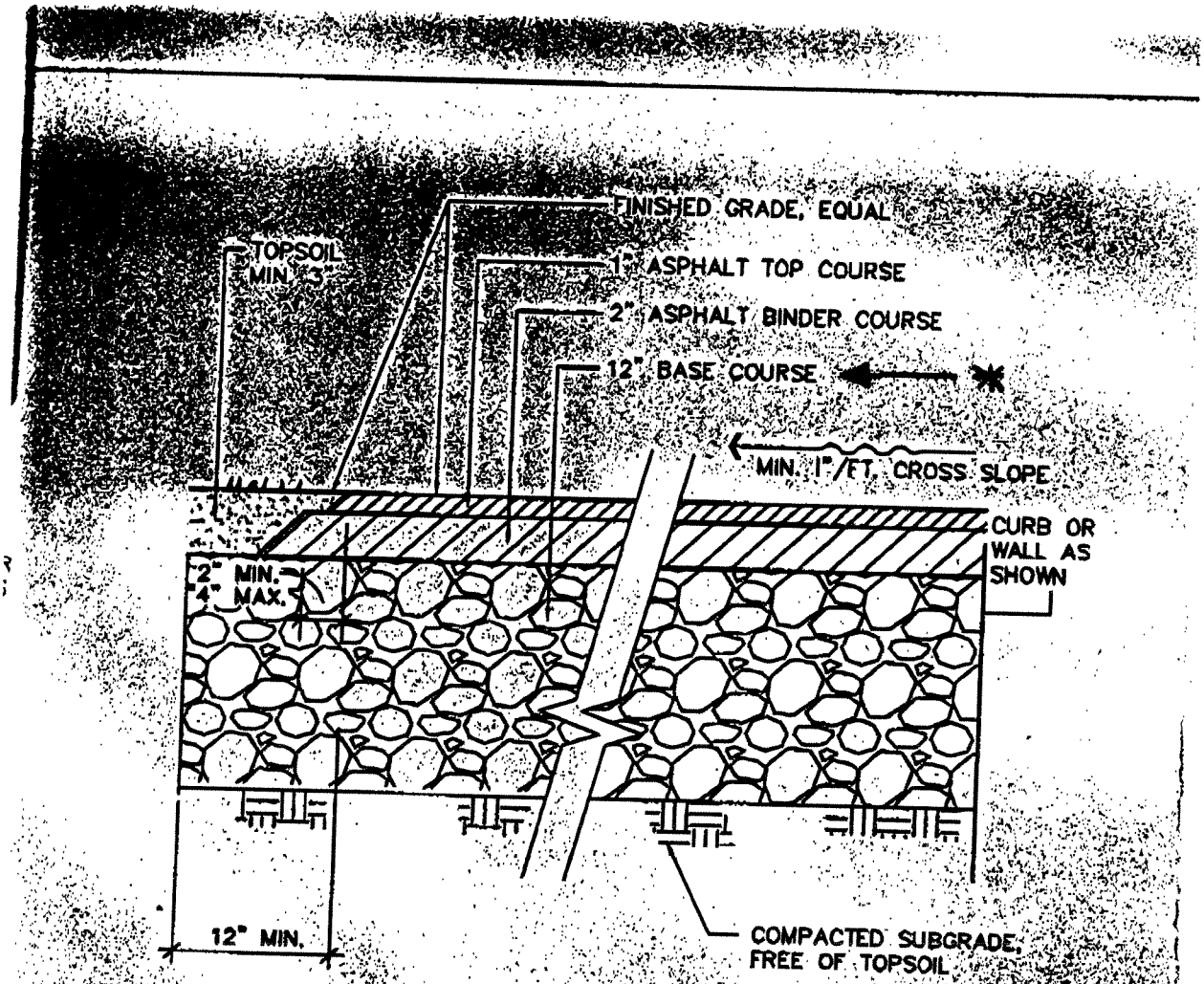
1 (11") ASPHALT PAVEMENT - TYPE 1

NTS

(CAR PARKING AREAS)

CERTAINTEED
BUFFALO NY

The Krog Corp.
4 Centre Drive
Orchard Park, NY 14127



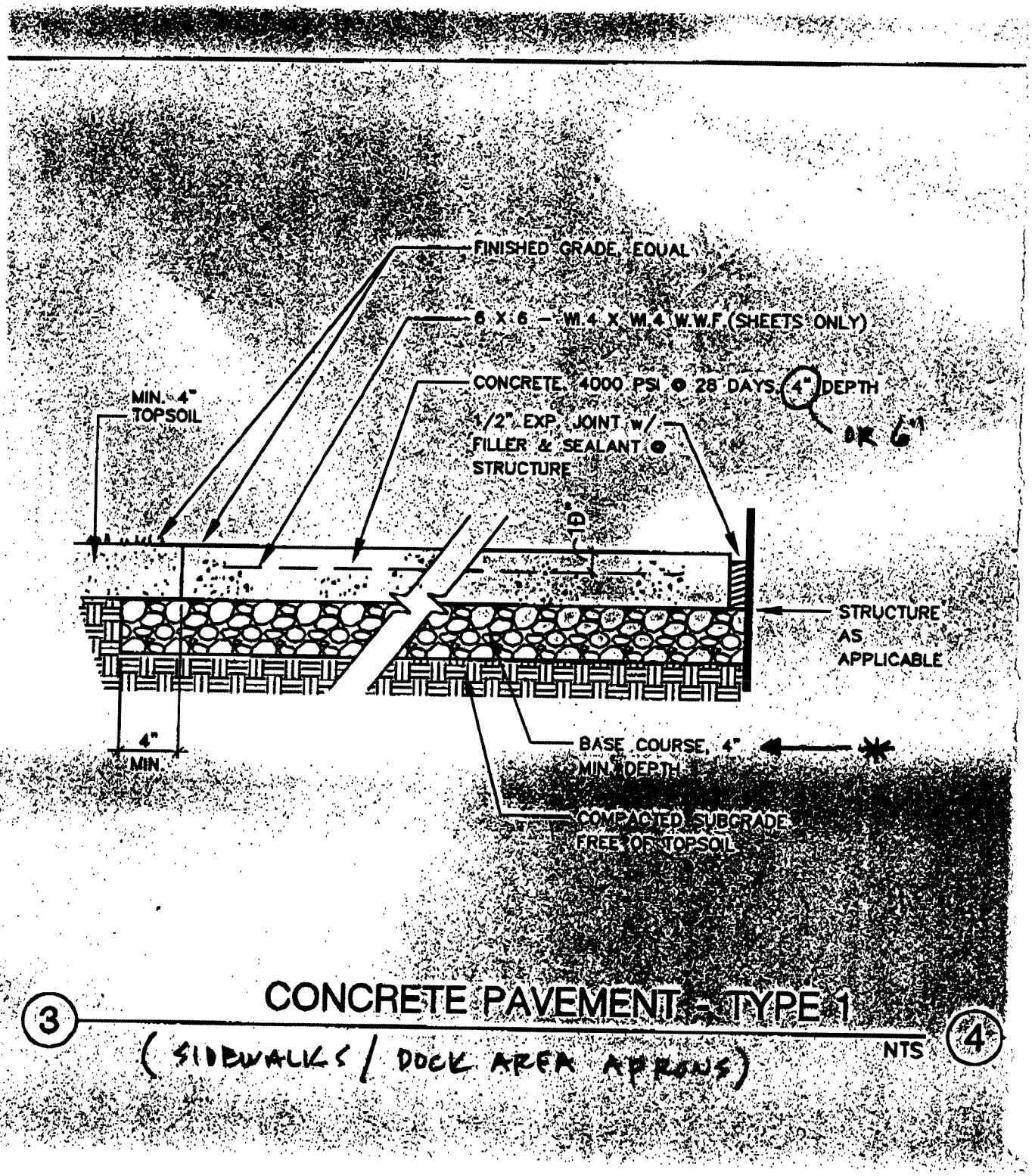
NOTE:
* DIMENSIONS GIVEN ON PLAN ARE TAKEN FROM EDGE OF ASPHALT TOP COURSE.

NTS (2) ASPHALT PAVEMENT - TYPE 2 NTS

(ROADWAY / TRUCK TRAFFIC)

CERTAIN TEED
BUFFALO NY

The Krog Corp.
4 Centre Drive
Orchard Park, NY 14127



3 CONCRETE PAVEMENT - TYPE 1 4

(SIDEWALKS / DOCK AREA APRONS)

NTS

CERTAIN TEED
BUFFALO, NY

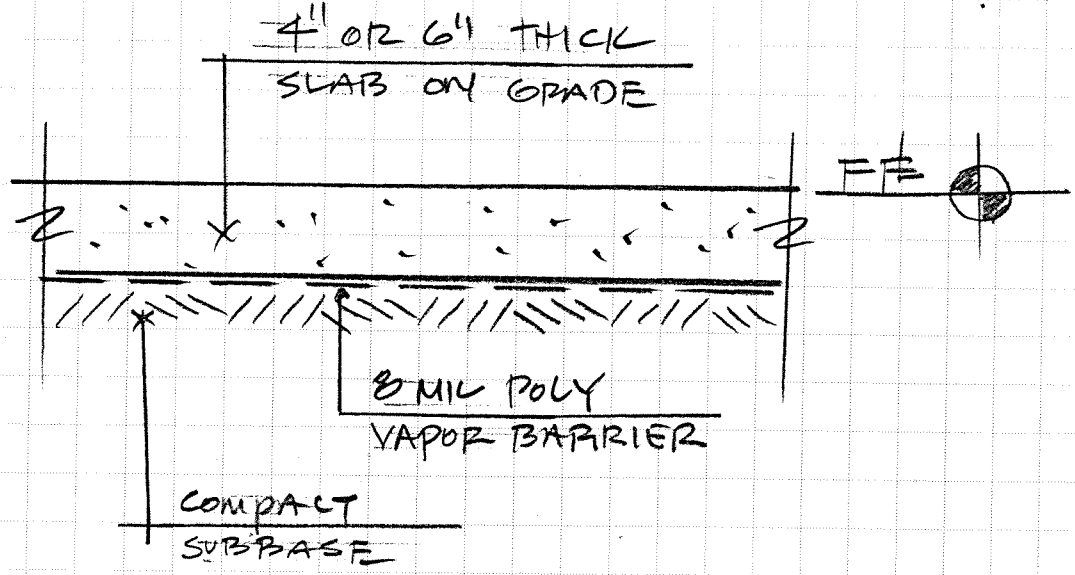
The Krog Corp.
4 Centre Drive
Orchard Park, NY 14127

The Krog Corp.

4 Centre Drive Orchard Park, New York 14127 Tel: 716-667-1234 Fax: 716-667-1258

JOB C-TEED # 03-526

DATE 1-31-05 SHEET NO SK-1

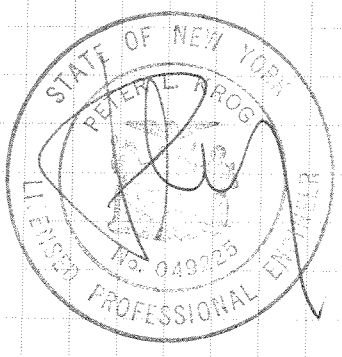


TYPICAL INTERIOR CONCRETE SLAB ON GRADE

"AS BUILT" 1-31-05

N.T.S.

CERTAINTEED PROJECT
231 SHIP CANAL PKWY
BUFFALO, NY 14218



MALCOLM PIRNIE

Operation, Monitoring, and Maintenance Requirements

SECTION 7

The Operation, Monitoring, and Maintenance (OM&M) Work Plan for the site describes the conditions and procedures for maintaining the physical components of the voluntary cleanup. Implementation of the OM&M is the responsibility of the property owner. The OM&M Work Plan is included in Appendix N, and includes the following:

- An organizational chart outlining the responsible party's personnel (with qualifications) who will be responsible for implementing the post-closure operation, maintenance and monitoring program.
- A health and safety plan.
- Example inspection report forms.
- A schedule for the annual inspections and reporting.

The OM&M Work Plan requires that physical components of the cover system be inspected annually by a representative of the property owner. The inspection requirements include evaluation of the cover system for sloughing, cracks, settlement, erosion, vegetation distress, and other damage. The OM&M Work Plan details typical maintenance and repairs necessary during the closure period.

MALCOLM PIRNIE

Certification

SECTION 8

Krog personnel monitored the remedial and construction activities performed at the site according to generally accepted practices. Based on Malcolm Pirnie's review of the field and laboratory data collected by Krog, Malcolm Pirnie, Inc., hereby certifies that the remedial and construction activities conducted at the site complied with the Remedial Action Work Plans approved by the NYSDEC. Notations of deviations from these documents are discussed in Section 5.0.

CONSULTANT CERTIFICATION

I certify that the Remedial Action Work Plan was implemented and that all construction activities were completed in substantial conformance with the Department-approved Remedial Action Work Plan and were personally witnessed by me or a person under my direct supervision or direction.

Kent McManus — (Signature)

4/06/05 — (Date)

Kent R. McManus, P.E., DEE, Senior Associate
(Printed Name and Title)

Malcolm Pirnie, Inc.

40 Centre Drive, Orchard Park, 14127

716-667-0900
(Company Name, Address and Telephone Number)

Certification

MALCOLM PIRNIE

OWNER CERTIFICATION

(Signature)

4/28/05
(Date)

Peter L. Krog, P.E, Owner
(Printed Name and Title)

The Krog Corporation

4 Centre Drive, Orchard Park, 14127

716-667-1234
(Company Name, Address and Telephone Number)