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General Electric Company
Albany, New York

Final (100%) Design Report for the OSD Remedy

Volume II of III – Appendices

Fletcher's Paint Works and Storage Facility
Superfund Site - Operable Unit 1
Milford, New Hampshire

November 21, 2012

SDMS Doc ID 529092

Volume II of III

Appendices

A Verification Sampling Plan

B Technical Drawings

C Technical Specifications

Appendices

Appendix A

Verification Sampling Plan

Imagine the result

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Verification Sampling Plan

Appendix A to the Final (100%) Design Report for the OSD Remedy

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Superfund Site – Operable Unit 1
Milford, New Hampshire

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Verification Sampling Plan

Fletcher's Paint Works and Storage Facility Superfund Site - Operable Unit 1
Milford, New Hampshire

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Abbreviations

Addendum No.1	Addendum No. 1, Preliminary (30%) Design Report
cy	Cubic yards
EPA	United States Environmental Protection Agency
ESD	Explanation of Significant Differences
Final Completion Report	Asbestos Removal and Building Demolition Source Control Remedial Action – Final Completion Report
Final Design Report	Final (100%) Design Report for the OSD Remedy
FSP	Field Sampling Plan
GE	General Electric Company
Intermediate OSD Design Report	Intermediate (60%) Design Report for the OSD Remedy
LTTD	Low temperature thermal desorption
$\mu g/cm^2$	Micrograms per 100 square centimeters
mg/kg	Milligrams per kilogram (parts per million [ppm])
OSD	Off-site disposal
OU-1	Operable Unit 1
ppm	Parts per million
PCBs	Polychlorinated biphenyls
PDI	Pre-Design Investigation
POP	Project Operations Plan

Preliminary Design Report	Preliminary (30%) Design Report for the LTTD Remedy
QAPP	Quality Assurance Project Plan
QA/QC	quality assurance/quality control
ROD	Record of Decision
SAP	Sampling and Analysis Plan
SCL	soil cleanup level
SDDC	Supplemental Design Data Collection
Site	Fletcher's Paint Works and Storage Facility Superfund Site
SPTC	Soldier Pile Tremie Concrete
Town	Town of Milford
TSCA	Toxic Substances Control Act
UAO	Unilateral Administrative Order
USACE	United States Army Corps of Engineers
VSP	Verification Sampling Plan

1. Introduction

1.1 Purpose

This *Verification Sampling Plan* (VSP) describes the proposed confirmation sampling activities that will be performed during implementation of the Remedial Action for Operable Unit 1 (OU-1) soils at the Fletcher's Paint Works and Storage Facility Superfund Site (the Site) located in Milford, New Hampshire. Specifically, this VSP provides detailed procedures for various confirmation sampling activities designed to demonstrate that the off-site disposal (OSD) soil remedy was performed in accordance with the requirements of the Remedial Design.

This VSP was developed for the primary purpose of providing procedures designed to demonstrate that the soils remaining at the Site following performance of the Remedial Action are consistent with the subsurface soil cleanup levels (SCLs) for total polychlorinated biphenyls (PCBs) applicable to the Elm and Mill Street Areas (i.e., 100 milligrams per kilogram [mg/kg, or parts per million (ppm)] for the Elm Street Area and 1 mg/kg for the Mill Street Area) unless otherwise approved by the United States Environmental Protection Agency (EPA). This VSP was designed to obtain a representative and comprehensive non-biased approach to providing verification that the PCB concentrations in subsurface soils are consistent with those SCLs. This VSP was also developed for the purpose of providing procedures for the sampling of: sources of clean backfill materials; non-disposable equipment utilized to implement the Remedial Action following equipment cleaning activities; and properties adjacent to the Site following performance of the Remedial Action.

The remainder of this section provides background information related to discussions between the General Electric Company (GE) and the EPA regarding the need for confirmation sampling activities at the Site to demonstrate compliance with the SCLs. This section also provides an overview of the types of confirmation sampling proposed for other miscellaneous activities at the Site. Finally, this section provides an overview of the format of this VSP. Additional details regarding the scope and performance of the confirmation sampling activities are presented in subsequent sections of this VSP.

1.2 Background

The need for and scope of confirmation soil sampling activities at the Site has been the subject of correspondence and meetings between GE and EPA. Although this plan discusses several different types of confirmation sampling, the correspondence and

discussions between GE and EPA on this subject have largely focused on the need for and scope of confirmation soil sampling activities to verify the limits of excavation at the Elm and Mill Street Areas.

Although discussions on the subject of confirmation soil sampling date back to the pre-design investigation (PDI), the most relevant discussions between GE and EPA have occurred during the Remedial Design phase. Specifically, confirmation sampling was discussed in the *Preliminary (30%) Design Report for the LTTD* (Preliminary Design Report) submitted by GE on November 30, 2005, EPA's comments on the Preliminary Design Report, and GE's responses to those comments, as presented in *Addendum No. 1, Preliminary (30%) Design Report* (Addendum No.1) submitted by GE on May 11, 2006. On June 6, 2006, EPA and GE representatives met to discuss the Preliminary Design Report and Addendum No. 1, including the topic of confirmation sampling at the Site. During that meeting, EPA reiterated that post-excavation confirmation soil sampling activities should target approximately 10% of the Elm and Mill Street Areas, subject to certain conditions. Based on that meeting, GE submitted a letter to the EPA on August 17, 2006 which discussed and modified the proposed confirmation sampling presented in the Preliminary Design Report. On February 13, 2007, the EPA provided approval with modifications for the confirmation sampling portion of the Preliminary Design Report, as modified by GE's August 17, 2006 submittal. In accordance with the conditions of EPA's February 13, 2007 letter, GE prepared a VSP as Appendix A to the *Intermediate (60%) Design Report for the Off-Site Disposal Remedy* (Intermediate OSD Design Report). That VSP provided details regarding the scope and performance of the confirmation soil sampling activities that GE proposes to undertake to verify the limits of excavation during the implementation of the OSD soil remedy, as well as verification sampling for several other aspects of the Remedial Action. EPA provided comments on the VSP included in the Intermediate OSD Design Report (as well as comments on other aspects of the Intermediate OSD Design Report) in a letter to GE dated November 1, 2007. The Town of Milford (Town) provided EPA with comments dated October 31, 2007 on the Intermediate OSD Design Report. The VSP provided in Appendix A of the *Final (100%) Design Report for the OSD Remedy* (Final Design Report), was revised to address those comments, as appropriate.

EPA provided approval with modifications to the December 2007 Final Design Report (as amended) in a letter to GE dated September 30, 2011. As requested in that letter, representatives of EPA, the United States Army Corps of Engineers (USACE), New Hampshire Department of Environmental Services (NHDES) and GE met on November 8, 2011 to discuss EPA's September 30, 2011 letter and other topics related

to revising/resubmitting the Final Design Report and the initiation of the Remedial Action phase of the OSD remedy. During that meeting, GE indicated that certain data gaps were identified in the Constructability Review Report on the OSD soil remedy. As a result, it was agreed that GE would provide (among other things) a work plan to address those data gaps to the EPA for review and approval. GE submitted the *Work Plan for Additional Field Work Necessary to Address Constructability Issues Regarding the OU-1 Soil Remedy* (also known as the SDDC Work Plan) on December 22, 2011 (as revised and resubmitted on April 6 and May 4, 2012 to address EPA/USACE comments). In addition to other activities, that document proposed the collection of several pre-construction verification sidewall samples at the Elm Street Area for the purpose of minimizing the amount of sidewall verification sampling and potential relocation of excavation supports that would be required during remedy implementation. Additional details regarding the pre-construction verification soil sampling activities performed at the Elm Street Area are provided in Section 2.6.

1.3 Scope of Verification Sampling Activities

This VSP provides a description of the confirmation sampling activities associated with the following components of the Remedial Action:

- Verification that the total PCB concentration in soils not subject to excavation do not exceed the applicable SCLs unless otherwise approved by the EPA;
- Verification that the proposed soil backfill materials are suitable for use during restoration of the Site;
- Verification that residential properties adjacent to the work areas were not impacted by the performance of the Remedial Action; and
- Verification that the equipment cleaning activities have sufficiently decontaminated the construction equipment utilized during the performance of the Remedial Action prior to leaving the Site.

1.4 Format of Document

Details regarding the scope and performance of the confirmation sampling activities associated with each of the activities identified in Section 1.3 are provided in the remainder of this VSP. The remainder of this document is presented in three sections. Section 2 presents details regarding verification of limits of excavation for both the Elm

and Mill Street Areas, including both excavation bottom and sidewall sampling. Details regarding other types of verification sampling for certain components of the Remedial Action (i.e., soil backfill materials, residential properties adjacent to the work areas, and cleaned equipment) are provided in Section 3. Finally, Section 4 presents information regarding the evaluation and reporting of the confirmation sample results collected as part of the above-listed verification sampling activities.

2. Confirmation Sampling Procedures for Excavation Limits

2.1 General

As indicated in Section 1.4, this section provides details regarding the scope and performance of confirmation sampling associated with verification of the limits of excavation, namely, that the concentration of total PCBs in soils not subject to excavation does not exceed the applicable SCLs. Additional details regarding the areas of the Site subject to confirmation soil sampling of excavation bottoms and sidewalls, and the scope of the collection, handling, and analysis of the confirmation samples, are presented in the following sections.

2.2 Site Description

As indicated in Section 1.3 of the revised Final Design Report, excluding the area of impacted groundwater, OU-1 measures approximately 2 acres in size and generally consists of the following three areas:

- The former Fletcher's Paint Works site at 39 Elm Street, referred to herein as the Elm Street Area;
- The former Fletcher's Paint Works storage facility, on the north side of Mill Street, referred to herein as the Mill Street Area; and
- A drainage ditch/culvert system that traverses in a northerly direction from the Mill Street Pond, past the Mill Street Area and through the Elm Street Area to the Souhegan River.

However, the Record of Decision (ROD) issued by EPA on September 30, 1998 for OU-1, as amended on June 15, 2009 does not require any excavation activities in the drainage ditch/cover system. Thus, confirmation sampling activities are not required for this portion of the Site, and this VSP focuses on the Elm and Mill Street Areas.

2.3 Determination of Excavation Cells Subject to Confirmation Sampling

Section 2.6 of the revised Final Design Report provides a detailed discussion regarding the development of the limits of soil removal at the Elm and Mill Street Areas. As indicated therein, the development of the excavation limits at the Elm Street Area was a three-step process. The first step involved the development of the limits of soil

removal required to achieve the applicable SCLs. Those excavation limits are presented on Figure 9 and Technical Drawing G-11 of the revised Final Design Report and are presented herein as Figures A-1 and A-2. Since these limits of soil removal were developed for the purpose of demonstrating achievement of the SCLs, these excavation limits are subject to the confirmation soil sampling activities proposed herein.

It should be noted that additional soil removal associated with the installation of an engineered cover system and utility and tree planting corridors is also proposed at the Elm Street Area in the revised Final Design Report. However, as noted in Section 2.6 of that document, the proposal to perform such additional soil removal is subject to three conditions, including: 1) the location and depth (and, for the utility corridors, width) of the utility and tree planting corridors would be as shown in that document; 2) the over-excavated material would be used as backfill in deeper excavations that are located within the horizontal extent of the soil cover system; and 3) confirmation soil sampling would not be required in any areas within which the depth of over-excavation is 2 feet or more. As a result, several areas associated with the installation of the engineered soil cover system, the replacement storm sewer, the gabion walls and the storm water retention area were eliminated from consideration of potential confirmation soil sampling since at least 2 feet of additional excavation, beyond that required to achieve the SCLs, was proposed for those areas. Finally, as part of the December 2007 Final Design Report, GE added a fourth condition regarding areas for which confirmation soil sampling is not required. That condition applies to areas where substantial additional excavation, beyond that required to achieve the SCLs, is proposed in the form of excavation sloping, which is required to safely implement the excavation portion of the Remedial Action. Consistent with the areas listed under Condition #3 above, GE proposed therein that confirmation sampling would not be required in areas where at least 2 feet of excavation (beyond that required to achieve the SCLs) is proposed as part of excavation sloping activities.

The next step in the design of the confirmation sampling program for the excavation bottoms involved a review of the limits of soil removal to determine if any of the excavation cells have soil removal limits that extend to vertical barrier conditions specified in EPA's ROD (as amended) for OU-1. Specifically, excavation is only required for those soils at the Elm Street Area containing total PCBs at concentrations greater than the subsurface SCL of 100 ppm to the depth of the seasonal low water table. Based on the current limits of soil removal identified in the revised Final Design Report, there is one excavation cell (Cell W on Figure 11) at the Elm Street Area that already extends to the depth of the seasonal low water table. As a result, confirmation

soil sampling will not be required for the base of that excavation cell. Should confirmation sampling for other cells require the extension of a cell or any portion thereof to the water table at the Elm Street Area, no excavation or confirmation sampling will be required at or below the depth corresponding to the seasonal low water table. Figure A-3 presents the excavation cells at the Elm Street Area that are subject to confirmation sampling for the excavation bottoms.

Similarly, excavation activities at the Mill Street Area are limited to soils containing total PCBs at concentrations greater than the SCL of 1 ppm that are located above bedrock. Based on the current limits of soil removal identified in the revised Final Design Report, there are two excavation cells (Cells H and O) at the Mill Street Area that already extend to bedrock. As a result, confirmation soil sampling will not be required for the base of those excavation cells. Should confirmation sampling for other cells require the extension of a cell or any portion thereof to bedrock at the Mill Street Area, no excavation or confirmation sampling will be required below the depth corresponding to bedrock. Figure A-4 presents the excavation cells at the Mill Street Area that are subject to confirmation sampling for the excavation bottoms.

Two modifications to the areas subject to confirmation presented were proposed in the December 2007 Final Design Report. First, an approximately 4-foot-wide strip of soil adjacent to the northern rail line at the Mill Street Area is not subject to confirmation sampling based on excavation limitations specified by the railroad. Specifically, as documented in previous submittals to EPA, the Remedial Action Contractor will not be allowed to excavate soils within 1 foot of the southern edge of the railroad ties for the northern rail line. Further, the Remedial Action Contractor will be required to slope excavations proceeding south from the rail line using a required excavation slope of 1.5H:1V. Based on these requirements, collection of samples within 4 feet of the northern rail line would be of no consequence, since the Remedial Action Contractor would not be able to perform additional excavation activities to address any results that are greater than the SCL of 1 ppm. Further, since excavation cell V is only 8 feet in total width between the northern rail line and the guide wall associated with the Soldier Pile Tremie Concrete (SPTC) wall (which includes the 4-foot-wide strip) and similarly subject to maximum sloping requirements at depth, excavation cell V has been eliminated from confirmation sampling. The second modification involves the addition of confirmation soil sampling activities within the numbered excavation cells (i.e., cells 1 through 6) located within Mill Street. Figure A-4, which presents the excavation cells at the Mill Street Area for which confirmation sampling is proposed for excavation bottoms, has been revised to include these two modifications.

2.4 Design of the Confirmation Sampling Program for Excavation Bottoms

This section provides specific details regarding the design of the confirmation sampling program for excavation bottoms at the Elm and Mill Street Areas. Additional details regarding the scope of the confirmation sampling activities for the excavation bottoms at both the Elm and Mill Street Areas are provided in Sections 2.5 and 2.7, respectively.

2.4.1 Design of the Confirmation Sampling Program

To limit the potential sampling bias associated with differences in individual excavation cell sizes, representative, comparable verification areas were developed. These verification areas are comprised of individual excavation cells (if sufficiently large) or a grouping of excavation cells that provide approximately equal area weighting for the entire evaluation area (i.e., Elm Street Area or Mill Street Area). To utilize such an area weighting approach, each verification area represents approximately 10% of the total horizontal area for the two evaluation areas. The number of samples per verification area was based on a simple random sampling model. This model states that every possible sampling point has an equal probability of being selected and each sample point is selected independently from all other sample points.

2.4.2 Excavation Cell Weighting

Within each verification area, each excavation cell was weighted based on the percentage of the entire verification area that each cell represents to determine the number of confirmation samples that were required. For example, a cell that represents 20% of a verification area was assigned values of 1 to 20. The next cell representing 35% of the verification area was assigned values of 21 to 55, and so on. To determine the apportioning of samples within a verification area, a random number generator was used to select *n* (based on the sample size number determined in Section 2.6) random values between 1 and 100. However, at a minimum, each individual excavation cell within a verification area has at least one confirmation sample. Further, where a single excavation cell is sufficiently large to be a verification area, this procedure was omitted.

2.4.3 Random Sample Selection

Upon calculating the number of confirmation samples required per excavation cell, within a verification area, the starting point was randomly determined by finding the location (X, Y) using the following equation (USEPA, 1992):

$X = X_{min} + RND_1 * (X_{max} – X_{min})$

$Y = Y_{min} + RND_2 * (Y_{max} – Y_{min})$

RND_1 and RND_2 are random numbers between 0 and 1. The orientation of the X axis was along the longest transverse within the excavation cell. If the computed (X, Y) location fell outside the excavation cell area, the procedure returned to the initial calculation step. If the computed (X, Y) location falls within the excavation cell area, then both the X and Y points were rounded to the nearest practicable unit (e.g., foot). After establishing the starting point, a systematic grid was used to identify the required confirmation sample locations.

2.4.4 Sample Grid Design

A systematic square grid was utilized within each excavation cell. The size of the individual excavation cell area (A) and the number of samples (n) was determined to calculate the distance (L) between the potential sampling locations in the systematic grid. The following formula calculates this distance (USEPA, 1989):

$$L = \sqrt{\frac{A}{n}}$$

For excavation cells that have only one confirmation sample, this formula was not applicable. This calculated distance was rounded to the nearest length unit to facilitate easy measurement in the field. Upon calculating this distance, a grid was constructed for each individual excavation cell area.

2.4.5 Composite Sample Design

Composite confirmation soil sampling will be utilized to provide a representative post-excavation concentration for each excavation cell area. Each composite will consist of

five equidistant discrete samples taken from a square sample grid (unit area), appropriately sized for each excavation cell area. A schematic diagram of this square sample grid is provided in Figure A-5. The composite sample grid size was determined by the individual excavation cell area and the number of confirmation samples required per individual excavation cell area. These two constraints will provide the size required to satisfy EPA's requirement of developing a confirmation soil sampling program that verifies the post-excavation PCB concentrations on a site-wide basis for approximately 10% of the Elm and Mill Street Areas. For example, if an excavation cell has a surface area of approximately 1,000 square feet and 10 confirmation soil samples are required from the excavation cell, each confirmation soil sample will cover an area measuring approximately 10 square feet, such that the combined square footage for the confirmation samples is approximately 100 square feet, or 10% of the excavation cell.

2.4.6 Sample Collection, Handling, and Analysis

Each discrete sample will be collected from the top foot of soil comprising the bottom of the excavation. Soil samples will be collected in accordance with the procedures specified in Appendix A of the *Field Sampling Plan* (FSP), which is Volume 2 of the *Sampling and Analysis Plan* (SAP), included in the *Project Operations Plan* (POP) approved by EPA for the PDI, subject to future revision during the Remedial Action phase and subsequent approval by EPA. All five discrete samples will be composited into a clean stainless steel mixing bowl and homogenized. An original sample of the homogenated soil will be collected for laboratory analysis. In addition, a field duplicate sample of the homogenated soil will also be sent to the laboratory, where it will be extracted and held for potential future analysis.

Quality assurance/quality control (QA/QC) samples will be collected, handled and analyzed based on the procedures outlined in the *Quality Assurance Project Plan* (QAPP), which is Volume 1 of the SAP. However, equipment (rinsate) blanks will be collected only in cases where non-dedicated sampling devices (e.g., reusable soil trowels) were used for sample acquisition. Dedicated devices include disposable single-use sampling devices (such as Lexan® core tubing). Equipment blanks will be prepared by pouring analyte-free water over decontaminated sampling equipment as a check that the decontamination procedure has been adequately carried out and that there is no cross-contamination of samples occurring due to the equipment itself. Analysis of equipment blanks will be performed for total PCBs, similar to the corresponding field samples. Equipment blanks will be prepared and collected at a frequency of 5% (one in 20) of the total number of samples collected with a non-dedicated sampling device.

Each composite confirmation soil sample will be submitted for PCB analysis using EPA Method 8082A. Each composite soil sample will be submitted to the analytical laboratory with a quick turn-around-time. The data for the confirmation soil samples will be evaluated using the procedures specified in Section 4 for the applicable analyses.

2.5 Elm Street Area Confirmation Sampling Plan – Excavation Bottoms

This section provides specific details regarding the scope of the confirmation soil sampling activities for excavation bottoms at the Elm Street Area, based upon the design of the confirmation sampling plan, as described in Section 2.4. It should be noted that the excavation bottom sampling proposed in this section represents a conceptual approach and is based on the assumption that such sampling can be performed in a safe manner. Should conditions at the Site result in concerns regarding the ability of sample collection personnel to safely enter an excavation to perform the specified sampling, the scope of sampling activities will need to be modified accordingly, which could include the elimination of certain samples.

2.5.1 Overview

The Elm Street Area consists of 44 individual excavation cells (Figure A-1), totaling approximately 100,120 square feet. As indicated in Section 2.3, several excavation cells will not require confirmation soil sampling since those cells are either proposed for excavation to the seasonal low water table (the maximum depth for which excavation activities are required at the Elm Street Area under the ROD [as amended]) or at least 2 feet of additional excavation (beyond that proposed to achieve the SCLs) is proposed to facilitate installation of the engineered cover system, establishment of the utility and tree planting corridors, and/or excavation sloping. The areas which are not subject to confirmation soil sampling are shaded in purple on Figure A-3. After eliminating these excavation cells, or portions thereof, 34 excavation cells remain with a total surface area of approximately 81,030 square feet subject to confirmation soil sampling activities at Elm Street Area (Table A-1). This square footage indicates the total excavation bottoms subject to confirmation soil sampling.

2.5.2 Identification of Verification Areas

Upon determination of the excavation cell bottoms that are subject to confirmation soil sampling, the excavation cells (or portions thereof) were grouped to form verification areas with approximately the same excavation bottom square footage, as indicated in

Section 2.4.1. To utilize the equal area weighting approach, 10 verification areas were developed, with each verification area representing approximately 10% of the total square footage of excavation bottoms subject to confirmation sampling. These verification areas are illustrated on Figure A-6.

2.5.3 Sample Size Determination

The number of samples required for each verification area is 10, as indicated in Table A-2. Therefore, 100 total confirmation soil samples are proposed for the excavation cell bottoms at the Elm Street Area, as illustrated on Figure A-7.

2.5.4 Area Weighting

As indicated in Section 2.4.2, the excavation cells comprising each verification area were weighted based upon the percentage of the total excavation cell bottom square footage for the verification area that the bottom of each excavation cell represented. This weighting of the excavation cells, presented in Table A-2, was the basis for determining the quantity of confirmation soil samples that are required within each excavation cell.

2.5.5 Random Sample Selection

The starting point for the identification of the locations subject to confirmation sampling was randomly determined using the procedures specified in Section 2.4.3. Upon determination of this starting point, the sampling grid utilized for each excavation cell was determined as further discussed below.

2.5.6 Sample Grids

The next step in the identification of the confirmation soil sampling locations involved the development of sampling grids in accordance with the procedures specified in Section 2.4.4. Table A-2 presents the results of the calculations related to the sample grids for the excavation cells within each verification area. Figures A-8 through A-17 present the sampling grids that were overlain upon each excavation cell within each verification area.

2.5.7 Composite Sampling Grids

The final step in the selection of the specific confirmation sampling locations for the Elm Street Area involves the calculation of the specific sampling grids for the confirmation samples located within each excavation cell. Table A-2 presents the sample grid sizes for the confirmation sampling associated with each excavation cell subject to such sampling at the Elm Street Area. The variable sizes of these composite sampling grids are illustrated on Figures A-8 through A-17. Additional information regarding the evaluation of the data from the confirmation soil sampling activities described herein is provided in Section 4.2.1.

2.6 Elm Street Area Confirmation Sampling Plan – Excavation Sidewalls

As indicated in Section 2.6 of the Final Design Report, EPA's February 13, 2007 approval with modifications letter for the confirmation sampling portion of the Preliminary Design Report, as modified by GE's August 17, 2006 submittal, required the performance of sidewall confirmation sampling for certain excavations at which solider pile and lagging excavation supports are proposed at the Elm Street Area. GE and EPA subsequently participated in a meeting on March 7, 2007 to discuss and clarify its letter. Based on EPA's February 13, 2007 letter and the March 7, 2007 meeting, GE proposed the collection of numerous verification sidewall samples along the soldier pile and lagging excavation supports at the Elm Street Area at the locations identified in the VSP included in Appendix A of the December 2007 draft Final Design Report. As noted therein, the purpose of such sampling was to confirm the placement of the excavation supports; more specifically, sidewall confirmation sampling was proposed for soldier pile and lagging excavation supports with a significant difference in elevation across the support structure.

The first step in developing the sidewall confirmation sampling program provided therein involved the identification of those excavation sidewalls that were determined to be subject to such confirmation sampling. Figure S-1 of the December 2007 draft Final Design Report indicated the proposed locations for the excavation supports at the Elm Street Area. The next step involved the elimination of excavation supports that were not being installed to support remedial excavations (e.g., excavation supports installed to provide structural support for utility corridor excavations and structural support for excavations adjacent to the cemetery). Figure A-3 of the December 2007 draft Final Design Report identified the excavation supports for which excavation sidewall sampling was not required.

Consistent with EPA's February 13, 2007 approval with modifications letter, sidewall confirmation samples were proposed to be collected via soil borings located approximately 5 feet behind the excavation supports (i.e., 5 feet from the excavation supports on the side that is either not subject to excavation or subject to shallower excavation). Based on EPA's letter and subsequent discussion with GE, the scope of the excavation sidewall confirmation sampling as proposed would have involved the installation of soil borings at a regular spacing along the excavation support, with grab samples collected from each soil boring at specified vertical horizons, and compositing of grab samples collected from the same horizon along an excavation sidewall. The samples from each soil boring along an excavation sidewall will be composited for analysis of total PCBs. For the purposes of that VSP, it was proposed that each soil boring generally represent no more than approximately 25 linear feet of excavation sidewall subject to confirmation sampling. Within each soil boring, 2-foot vertical grab samples were proposed to be collected every 5 feet (e.g., from 3 to 5 feet, 8 to 10 feet, etc.) such that each grab sample will represented a sampling horizon approximately 5 feet in thickness.

As an example, soldier pile and lagging excavation supports were proposed between adjacent Cells H and K, shown on Figure A-3 of the December 2007 draft Final Design Report. Approximately 90 linear feet of excavation supports were proposed in that document between those two excavation cells. As a result, it was proposed that four soil borings would be installed along the excavation supports, at the locations shown on Figure A-18 of that document. Since the difference between the depth of excavation for those two cells was approximately 10 feet, samples were proposed to be collected from each soil boring from one two-foot depth increment within both the 0- to 5-foot and 5- to 10-foot depth increments (e.g., a 3- to 5-foot sample and an 8- to 10-foot sample), as measured from the base of the shallower excavation, which in that case was Excavation Cell H.

The VSP included in the December 2007 draft Final Design Report also indicated that, once collected, the grab samples from a given sampling horizon would be composited across the number of soil borings located along the length of one sidewall for analysis of total PCBs using EPA Method 8082A. Finally, as noted therein, certain excavation cells require excavation supports that extend across multiple adjacent excavation cells with varying depths of excavation. In such instances, samples will only be composited across soil borings advanced within excavation cells with similar excavation depths. Table A-3 of the December 2007 draft Final Design Report summarized the sidewall sampling activities proposed for the excavation supports that were designed to be installed at the Elm Street Area. Additional information regarding the evaluation of the

data from the confirmation soil sampling activities described herein is provided in Section 4.2.2.

The potential need to relocate excavation supports during the performance of the Remedial Action on the basis of sidewall sampling results collected during remedy implementation resulted in the identification of the sidewall sampling as a data gap in the draft Constructability Review Report prepared on the December 2007 draft Final Design Report. As noted in Section 1.2, GE proposed an extensive pre-construction verification soil sampling program under the SDDC Work Plan with the goal of confirming the placement of the excavation supports prior to remedy implementation; thereby eliminating the need to collect such samples and the potential need to relocate the excavation supports during implementation of the OU-1 soil remedy. The VSP included in the December 2007 draft Final Design Report proposed the collection of 40 sidewall verification samples. As some of the locations proposed therein are along the riverbank at the Elm Street Area and are not accessible prior to the performance of the excavation activities under the WMP, the initial sampling under the SDDC Work Plan involved the collection of 33 pre-construction verification samples for analysis of PCBs.

EPA approved the proposed scope of pre-construction verification soil sampling proposed in the SDDC Work Plan and GE collected those initial samples in April and May 2012. The results of the initial sampling were generally evaluated using the procedures specified in Section 4.2.2 of the VSP included as Appendix A of the December 2007 draft Final Design Report. The results of the initial sampling indicated that 14 of the initial 34 preconstruction verification soil samples (including one sample duplicate) contained PCBs at concentrations greater than the SCL of 100 mg/kg applicable to subsurface soils at the Elm Street Area. As a result, GE proposed additional preconstruction verification sampling in a July 18, 2012 electronic mail to EPA. EPA provided comments to that proposal in a September 7, 2012 letter and GE conducted two additional rounds of sampling in October 2012, incorporating many or EPA's comments from the September 7, 2012 letter. The results of that sampling indicated that only seven of the additional 67 pre-construction verification soil samples contained PCBs at concentrations greater than the subsurface SCL of 100 mg/kg. The pre-construction verification soil sample data collected under the SDDC Work Plan are provided in Table A-3.

A review of the pre-construction verification soil sampling data indicated that the excavation supports around Excavation Cell D are correctly positioned and do not require relocation. The results of the remaining pre-construction verification soil sampling data were used to revise the limits of soil removal and the locations of certain

excavation supports at the Elm Street Area, as presented on Figure A-1. As also indicated on Figure A-1, certain excavation supports were repositioned at locations adjacent to Excavation Cells H, K, S/T, W, and MM. The pre-construction verification soil sample results at the revised locations for the excavation supports, combined with pre-design soil sample data (where appropriate), as presented on Figure 5 of the revised Final Design Report, are all less than the subsurface SCL of 100 ppm - with many of those samples containing PCBs at concentrations significantly lower than the subsurface SCL of 100 ppm. Based on these sample results and the associated revisions to the support of excavation design for the Elm Street Area, GE has completed the pre-construction verification soil sampling for the non-riverbank portions of the Elm Street Area. However, as indicated on Figure A-18 and Table A-4, GE will perform the collection of six riverbank sidewall verification samples adjacent to Excavation Cells F (two samples) and W (four samples) during remedy implementation. Due to access limitations (i.e., the steepness of the riverbank), those samples could not be collected as part of the activities under the SDDC Work Plan.

2.7 Mill Street Area Confirmation Sampling Plan – Excavation Bottoms

This section provides specific details regarding the scope of the confirmation soil sampling activities for excavation bottoms at the Mill Street Area, based upon the design of the confirmation sampling plan, as described in Section 2.4. As indicated in Section 2.5, the collection of excavation bottom confirmation samples is contingent upon the ability of sample collection personnel being able to safely enter an excavation to perform the specified sampling.

2.7.1 Overview

The Mill Street Area consists of 28 individual excavation cells (Figure A-2), totaling approximately 30,480 square feet. As indicated in Section 2.3, several excavation cells will not require confirmation soil sampling since those cells are proposed for excavation to the bedrock (the maximum depth for which excavation activities are required under the ROD). The areas which are not subject to confirmation soil sampling are shaded in purple on Figure A-4. After eliminating these excavation cells, or portions thereof, 25 excavation cells remain with a total surface area of approximately 20,180 square feet subject to confirmation soil sampling activities at the Mill Street Area (Table A-5). This square footage indicates the total excavation bottoms subject to confirmation soil sampling.

2.7.2 Identification of Verification Areas

Upon determination of the excavation cell bottoms that are subject to confirmation soil sampling, the excavation cells (or portions thereof) were grouped to form verification areas with approximately the same excavation bottom square footage, as indicated in Section 2.4.1. To utilize the equal area weighting approach, 10 verification areas were developed, with each verification area representing approximately 10% of the total square footage of excavation bottoms subject to confirmation sampling. These verification areas are illustrated on Figure A-19.

2.7.3 Sample Size Determination

The number of samples required for each verification area is 10, as indicated in Table A-6. Therefore, 100 total confirmation soil samples are proposed for the excavation cell bottoms at the Mill Street Area, as illustrated on Figure A-20.

2.7.4 Area Weighting

As indicated in Section 2.4.2, the excavation cells comprising each verification area were weighted based upon the percentage of the total excavation cell bottom square footage within the verification area that the bottom of each excavation cell represented. This weighting of the excavation cells, presented in Table A-6, was the basis for determining the quantity of confirmation soil samples that are required within each excavation cell.

2.7.5 Random Sample Selection

The starting point for the identification of the locations subject to confirmation sampling was randomly determined using the procedures specified in Section 2.4.3. Upon determination of this starting point, the sampling grid utilized for each excavation cell was determined as further discussed below.

2.7.6 Sample Grids

The next step in the identification of the confirmation soil sampling locations involved the development of sampling grids in accordance with the procedures specified in Section 2.4.4. Table A-6 presents the results of the calculations related to the sample grids for the excavation cells within each verification area. Figures A-21 through A-30

present the sampling grids that were overlain upon each excavation cell within each verification area.

2.7.7 Composite Sampling Grids

The final step in the selection of the specific confirmation sampling locations for the Mill Street Area, involves the calculation of the specific sampling grids for the confirmation samples located within each excavation cell. Table A-6 presents the sample grid sizes for the confirmation sampling associated with each excavation cell subject to such sampling at the Elm Street Area. The variable sizes of these composite sampling grids are represented on Figures A-21 through A-30. Additional information regarding the evaluation of the data from the confirmation soil sampling activities described herein is provided in Section 4.2.3.

3. Non-SCL Verification Sampling

As indicated in Section 1, this section provides information related to the performance of miscellaneous confirmation sampling activities that are not associated with verifying the limits of excavation at the Elm and Mill Street Areas. Specifically, this section provides information related to confirmation sampling for the following activities associated with implementation of the OSD soil remedy:

- Verification that the soil backfill materials are suitable for use during restoration of the Site;
- Verification that residential properties adjacent to the work areas were not impacted by the performance of the Remedial Action; and
- Verification that the heavy construction equipment utilized in the performance of the Remedial Action is clean prior to leaving the Site.

Consistent with the procedures specified in Section 2, QA/QC samples will be collected, handled and analyzed based on the procedures outlined in the QAPP, which is Volume 1 of the SAP. However, equipment (rinsate) blanks will be collected only in cases where non-dedicated sampling devices (e.g., reusable soil trowels) were used for sample acquisition. Dedicated devices include disposable single-use sampling devices (such as Lexan® core tubing). Equipment blanks will be prepared by pouring analyte-free water over decontaminated sampling equipment as a check that the decontamination procedure has been adequately carried out and that there is no cross-contamination of samples occurring due to the equipment itself. Analysis of equipment blanks will be performed for total PCBs as in the corresponding field samples. Equipment blanks will be prepared and collected at a frequency of 5% (one in 20) of the total number of samples collected with a non-dedicated sampling device.

Each composite confirmation soil sample will be submitted for PCB analysis using EPA Method 8082A. Each composite soil sample will be submitted to the analytical laboratory with a short turn-around time. The data for the confirmation soil samples will be evaluated using the procedures specified in Section 4 for the applicable analyses. Additional details regarding the scope of the verification sampling proposed for each of the above-listed activities are provided below.

3.1 Soil Backfill Verification Sampling

Both on-site and off-site soil backfill materials will be utilized to restore the excavations. The on-site source of soil backfill consists of the sand cap previously installed by EPA over the footprint of the former building at the Elm Street Area and over-excavated soils associated with the installation of the replacement storm sewer, engineered soil cover, gabion retaining wall, and storm water retention area at the Elm Street Area; however, the latter four items are not subject to verification sampling. In addition, soils generated from excavation areas requiring excavation sloping extending beyond 2 feet in depth are not subject to confirmation sampling. Off-site sources of backfill materials subject to confirmation sampling will include imported clean soil fill (i.e., general backfill, topsoil, and other materials used for the engineered cover system). Other materials obtained from off-site sources that are not subject to confirmation sampling include riprap, asphalt, stone, flowable fill, etc). Additional details regarding the scope of the verification sampling activities for each of these sources are provided below.

3.1.1 Sand Cap Material

As indicated in Section 1.3.1 of the Final Design Report, the EPA demolished and removed the one-story building at the Elm Street Area between December 2000 and January 2001. Following completion of this work, a temporary geotextile liner and a sand cap were placed over the footprint of the former building. These activities were described in the *Asbestos Removal and Building Demolition Source Control Remedial Action – Final Completion Report* (Final Completion Report) (U.S. Army Corps of Engineers [USACE], May 2002). Since these clean cap materials are isolated from the underlying impacted soils, it is assumed that these materials may be reused as supplemental backfill during site restoration activities.

To avoid mixing of the clean cap materials with impacted soils, a few inches of the clean cap materials will be left over the temporary liner as a conservative measure. Based on information provided in the revised Final Completion Report, an estimated 1,000 cubic yards (cy) of sand are available for reuse as clean backfill materials. Prior to performance of excavation activities for impacted materials, the portion of the sand cap available for reuse will be removed and stockpiled in a clean materials staging area for sampling.

Composite samples will be collected from the sand cap material in 400-ton (or 250-cy) batches. Based on the 1,000-cy estimate for the amount of sand cap available for reuse, four composites would be collected. The composite sample for each batch of

sand cap material will consist of three to five grab samples (i.e., each consisting of two heaping scoops of soil). The grab samples for a given composite sample will be collected with a stainless steel spoon and added to a large clean stainless steel bowl. The grab soil samples in the stainless steel bowl will be mixed thoroughly with the stainless steel spoon to form a composite sample representing the sand cap material batch. Two subsamples of each composite sample will be collected and placed into containers, with one sent to the analytical laboratory for analysis of total PCBs by EPA Method 8082A, and the other sample sent to the laboratory for extraction and archiving for possible future analysis. Additional details regarding the evaluation of the data associated with the verification of backfill materials are provided in Section 4.2.4.

3.1.2 Imported Backfill Materials

As indicated in Section 5 of the Final Design Report, it will be necessary to import clean soil fill materials (i.e., general backfill, topsoil, and other material used for the engineered cover system) to assist with site restoration activities. It is anticipated that such soil fill materials will be from virgin borrow sources. To confirm this, the selected the Remedial Action Contractor will be required to collect samples to demonstrate the suitability of such off-site materials for use as general backfill, topsoil and/or engineered cover system materials at the Site. Following identification of the off-site source(s) of soil fill material, three samples of each type of soil fill material (excluding non-soil surface restoration materials such as riprap, run-of-crusher stone, flowable fill, asphalt and concrete), will be collected at the source(s). Confirmation samples from potential soil backfill sources will be analyzed for total PCBs by EPA Method 8082A. Should such soil fill be proposed for use in the top foot of site restoration materials, the confirmation samples from those materials will be sampled for analysis of non-PCB constituents (i.e., benzo[a]anthracene, benzo[a]pyrene, and benzo[b]fluoranthene) by EPA Method 8270C and arsenic by EPA Method 6010 for comparison to the SCLs specified in the ROD (as amended). Additional details regarding the evaluation of the data associated with the verification of backfill materials are provided in Section 4.2.4.

3.2 Adjacent Property Verification Sampling

Following completion of the Remedial Action, confirmation soil sampling activities will be performed on certain properties located immediately adjacent to the work areas at the Elm and Mill Street Areas to determine whether such properties were impacted by the performance of the Remedial Action. The properties to be sampled are Parcels 25-10 and 25-11 located to the west of the Elm Street Area (Figure A-1), Parcels 25-93, 25-93A, and 25-94 located south of the Mill Street Area, and Parcel 25-109 located

west of the Draper Fuel Company (Draper) property, which is located west of the Mill Street Area (Figure A-2). A composite sample will be collected at each of these properties and submitted for analysis of total PCBs using EPA Method 8082A. Each composite sample will consist of three to five grab samples collected within a 20-foot by 20-foot area. Each grab sample will be collected from the top 6 inches of soil (i.e., non-grass/turf). The grab soil samples will be placed in a clean stainless steel bowl and mixed thoroughly with a stainless steel spoon to form a composite sample. Additional details regarding the evaluation of the data associated with the verification of soils at properties adjacent to the areas of work are provided in Section 4.2.5.

3.3 Equipment Cleaning Verification Sampling

Contractor equipment and materials will be demobilized from the Site as the remediation activities are completed. Equipment and materials that did not contact impacted materials will be demobilized from the Site once such equipment/materials are no longer required. Non-disposable contractor equipment that comes into contact with impacted materials during performance of the Remedial Action will be cleaned prior to demobilizing from the Site, utilizing the procedures specified in Appendix S of the FSP, subject to future revision during the Remedial Action phase and subsequent approval by EPA.

Certain equipment (i.e., applicable portions of the water treatment facility) will be cleaned in place prior to demobilization since such equipment will be staged in lined/bermed areas equipped with sumps. Cleaning activities for other pieces of contractor equipment will be performed at the appropriate equipment cleaning/decontamination areas. Equipment cleaning activities will generally consist of gross solids removal, followed by pressure cleaning, and wipe sampling to confirm that the equipment is clean prior to leaving the Site. The wipe sampling procedures will be included in future revisions to the procedures specified in Appendix S of the FSP and will be subject to review and approval by EPA. Additional details regarding the evaluation of the data associated with the verification of equipment cleaning are provided in Section 4.2.6.

4. Verification Sampling Data Evaluation and Reporting

4.1 General

This section presents a discussion of the data evaluation that will be performed for each of the verification sampling activities described in Sections 2 and 3 of this VSP. This section also presents a discussion of the reporting requirements following receipt and evaluation of laboratory analytical results. However, given the need to obtain, review, and act on the confirmation sampling results quickly to avoid significant impact on the progression of the OU-1 soil remedy, validation of the data will not be performed.

4.2 Confirmation Sample Evaluation

As indicated in Sections 2 and 3 of this report, verification sampling is proposed for several different components of the Remedial Action. In summary, verification sampling is proposed for the following items:

- Excavation bottoms – Elm Street Area;
- Excavation sidewalls – Elm Street Area;
- Excavation bottoms – Mill Street Area;
- Backfill materials;
- Residential properties adjacent to the work areas; and
- Cleaned/decontaminated construction equipment.

The confirmation sampling associated with each of the above-listed items was discussed in Sections 2 and 3. The remainder of this section presents the evaluation procedures for the data generated by the various verification sampling activities listed above.

4.2.1 Excavation Bottoms – Elm Street Area

Upon completion of the post-excavation confirmation sampling described in Section 2.5 for each verification area, the analytical results will be evaluated using the following criteria:

- If all confirmation sample data for a given verification area are equal to or below the subsurface SCL of 100 mg/kg total PCBs, then the excavation activities for that verification area will be considered complete.

- If one or more confirmation sample results are greater than 100 mg/kg total PCBs, but less than or equal to 150 mg/kg total PCBs, the mean (i.e., average) of the 10 composite sample results will be calculated. If the mean is less than or equal to 100 mg/kg, then the excavation activities for that verification area will be considered complete. If the mean is greater than 100 mg/kg, then additional analysis, sampling, and/or Remedial Action is necessary.

- If one or more confirmation sample results are greater than 150 mg/kg total PCBs, then additional analysis, sampling, and/or Remedial Action is necessary.

If the evaluation of the post-excavation confirmation sample results indicates that the excavation activities within a given verification area are not complete, then additional data evaluation, analysis, and/or sampling will be performed for the confirmation sample(s) that are either: 1) causing the average concentration to be greater than the subsurface SCL; or 2) above 150 mg/kg total PCBs. In such an instance, the following activities will be performed to evaluate and confirm completeness within each verification area:

- Review the sample result(s) in question to ensure that the confirmation sample(s) was collected, handled, and analyzed correctly. This process will include review of the field notes and any QA/QC results that were performed for the confirmation samples associated with that verification area.

- If any sample result(s) in question is determined to be unusable, then the confirmation sampling associated with the subject result(s) will be repeated. The new result(s) will be substituted for the prior result(s), and the evaluation described at the beginning of this section will be repeated to determine if the excavation activities for the verification area are complete.

- If the sample result(s) in question is determined to be usable, and a field duplicate sample(s) was analyzed for the confirmation sample(s) in question (field duplicates will be analyzed at a frequency of one in 20 samples), then the result(s) for each field duplicate sample(s) will be averaged with the result(s) of the original confirmation sample(s), the average(s) will be substituted for the original result(s), and the evaluation described at the beginning of this section will be repeated to determine if the excavation activities for the verification area are complete.

- If the sample result(s) in question is determined to be usable, and a field duplicate sample(s) was not analyzed for the confirmation sample(s) in question, then the archived extract for the field duplicate confirmation sample(s) will be analyzed. Once the result(s) is received, the result(s) for the archived extract of the field duplicate sample(s) will be averaged with the result(s) of the original confirmation sample(s), the average(s) will be substituted for the original result(s), and the evaluation described at the beginning of this section will be repeated to determine if the excavation activities for the verification area are complete.

If, after the above process, the confirmation sample results do not meet the criteria established to consider the excavation activities complete for a given verification area, then additional Remedial Action will be performed. In this case, an additional foot of soil will be excavated within the confirmation sampling grid at the location(s) in question, unless such excavation is prevented by physical constraints in that area (e.g., seasonal low water table). The area of additional excavation will then be subject to the same confirmation sampling, and the new result(s) will be substituted for the prior results and the evaluation process will be repeated to determine if the excavation activities in the verification area are complete. This process will be repeated as necessary until the criteria are met or additional excavation is prevented by physical and/or engineering constraints. Upon completion of the excavation activities for each verification area, backfilling activities will be performed as described in Section 5 of the Final Design Report.

4.2.2 Excavation Sidewalls – Elm Street Area

Upon completion of the confirmation sampling for the excavation sidewalls along the riverbank (i.e., those bounded by soldier piles and lagging with significant elevation differences between the passive and active sides) at the Elm Street Area, as described in Section 2.6, the analytical results will be evaluated using the following criteria:

- If all confirmation sample results for a given segment of excavation sidewall are equal to or below the subsurface SCL of 100 mg/kg total PCBs, then the excavation activities for that sidewall will be considered complete.

- If one or more confirmation sample results for a given segment of excavation sidewall are greater than 100 mg/kg total PCBs, but less than or equal to 150 mg/kg total PCBs, the mean (i.e., average) of the sample results for each vertical horizon for that segment of excavation sidewall will be calculated. If the means are less than or equal to 100 mg/kg total PCBs, then the excavation activities for that segment of excavation sidewall will be considered complete. If one or more of the means is greater than 100 mg/kg, then additional analysis, sampling and/or Remedial Action is necessary.

- If one or more confirmation sample results for a given segment of excavation sidewall are greater than 150 mg/kg total PCBs, then additional analysis, sampling and/or Remedial Action is necessary.

If the evaluation of the confirmation sample results indicates that the excavation activities for a given segment of excavation sidewall are not complete, then additional data evaluation, analysis, and/or sampling will be performed for the confirmation sample(s) that are either: 1) causing the average concentration to be greater than the subsurface SCL; or 2) above 150 mg/kg total PCBs. In such an instance, the following activities will be performed to evaluate and confirm completeness for each segment of excavation sidewall:

- Review the sample result(s) in question to ensure that the confirmation sample(s) was collected, handled, and analyzed correctly. This process will include review of the field notes and any QA/QC results that were performed for the confirmation samples associated with that verification area.

- If any sample result(s) in question is determined to be unusable, then the confirmation sampling associated with the subject result(s) will be repeated. The new result(s) will be substituted for the prior result(s), and the evaluation described at the beginning of this section will be repeated to determine if the excavation activities for the excavation sidewall segment are complete.

- If the sample result(s) in question is determined to be usable, and a field duplicate sample(s) was analyzed for the confirmation sample(s) in question (field duplicates will be analyzed at a frequency of one in 20 samples), then the result(s) for each

field duplicate sample(s) will be averaged with the result(s) of the original confirmation sample(s), the average(s) will be substituted for the original result(s), and the evaluation described at the beginning of this section will be repeated to determine if the excavation activities for the excavation sidewall segment are complete.

- If the sample result(s) in question is determined to be usable, and a field duplicate sample(s) was not analyzed for the confirmation sample(s) in question, then the archived extract of the field duplicate confirmation sample(s) will be analyzed. Once the result(s) is received, the result(s) for the archived extract of the field duplicate sample(s) will be averaged with the result(s) of the original confirmation sample(s), the average(s) will be substituted for the original result(s), and the evaluation described at the beginning of this section will be repeated to determine if the excavation activities for the excavation sidewall segment are complete.

If, after the above process, the confirmation sample results do not meet the criteria established to consider the excavation activities complete for a given segment of excavation sidewall, then additional Remedial Action will be performed. In this case, where additional sidewall excavation is required, the excavation will be extended 2 to 5 feet beyond the location of the soil boring(s) demonstrating the exceedance. This will require the design and installation of additional structural supports (presumably more soldier pile with lagging) to support the additional sidewall excavation. Once the additional sidewall excavation is completed, the excavation will be considered complete and backfilling of the excavation can commence, as specified in Section 5 of the Final Design Report. More specifically, only one round of sidewall confirmation sampling (and therefore, one round of potential additional sidewall excavation) will be required.

4.2.3 Excavation Bottoms – Mill Street Area

Upon completion of the post-excavation confirmation sampling described in Section 2.7 for each verification area, the analytical results will be evaluated using the following criteria:

- If all confirmation sample data for a given verification area are equal to or below the subsurface SCL of 1 mg/kg total PCBs, then the excavation activities for the verification area will be considered complete.

- If one or more confirmation sample results are greater than 1 mg/kg total PCBs, but less than or equal to 2 mg/kg total PCBs, the mean (i.e., average) of the 10 composite sample results will be calculated. If the mean is less than or equal to 1 mg/kg, then the excavation activities for that verification area will be considered complete. If the mean is greater than 1 mg/kg, then additional analysis, sampling and/or Remedial Action is necessary, unless EPA has already approved leaving similar PCB concentrations behind (i.e., not included within the excavation limits presented in the Final Design Report) at or near that verification area, in which case the excavation activities for that verification area will be considered complete.

- If one or more confirmation sample results are greater than 2 mg/kg total PCBs, then additional analysis, sampling, and/or Remedial Action is necessary unless EPA has already approved leaving similar PCB concentrations behind (i.e., not included within the excavation limits presented in the Final Design Report) at or near that verification area.

If the evaluation of the post-excavation confirmation sample results indicates that the excavation activities within a given verification area are not complete, then additional data evaluation, analysis and/or sampling will be performed for the confirmation sample(s) that are either: 1) causing the average concentration to be greater than the subsurface SCL; or 2) above 2 mg/kg total PCBs. In such an instance, the following activities will be performed to evaluate and confirm completeness within each verification area:

- Review the sample result(s) in question to ensure that the confirmation sample(s) was collected, handled, and analyzed correctly. This process will include review of the field notes and any QA/QC results that were performed for the confirmation samples associated with that verification area.

- If any sample result(s) in question is determined to be unusable, then the confirmation sampling associated with the subject result(s) will be repeated. The new result(s) will be substituted for the prior result(s), and the evaluation described at the beginning of this section will be repeated to determine if the excavation activities for the verification area are complete.

- If the sample result(s) in question is determined to be usable, and a field duplicate sample(s) was analyzed for the confirmation sample(s) in question (field duplicates will be analyzed at a frequency of one in 20 samples), then the result(s) for each field duplicate sample(s) will be averaged with the result(s) of the original

confirmation sample(s), the average(s) will be substituted for the original result(s), and the evaluation described at the beginning of this section will be repeated to determine if the excavation activities for the verification area are complete.

- If the sample result(s) in question is determined to be usable, and a field duplicate sample(s) was not analyzed for the confirmation sample(s) in question, then the archived extract from the field duplicate confirmation sample(s) will be analyzed. Once the result(s) is received, the result(s) for the archived extract of the field duplicate sample(s) will be averaged with the result(s) of the original confirmation sample(s), the average(s) will be substituted for the original result(s), and the evaluation described at the beginning of this section will be repeated to determine if the excavation activities for the verification area are complete.

If, after the above process, the confirmation sample results do not meet the criteria established to consider the excavation activities complete for a given verification area, then additional Remedial Action will be performed. In this case, an additional foot of soil will be excavated within the confirmation sampling grid at the location(s) in question, unless such excavation is prevented by physical constraints in that area (e.g., bedrock). The area of additional excavation will then be subject to the same confirmation sampling, and the new result(s) will be substituted for the prior results and the evaluation process will be repeated to determine if the excavation activities in the verification area are complete. This process will be repeated as necessary until the criteria are met or additional excavation is prevented by physical and/or engineering constraints. Upon completion of the excavation activities for each verification area, backfilling activities will be performed as described in Section 5 of the Final Design Report.

4.2.4 Soil Backfill Materials

As indicated in Section 3.1, verification sampling will be performed for two types of soil backfill materials, including: 1) the sand cap over the former building footprint at the Elm Street Area; and 2) clean imported soil fill materials (i.e., general backfill, topsoil, and other materials associated with the engineered cover system at the Elm Street Area). Additional details regarding the evaluation of the confirmation samples for each of these areas are provided below.

4.2.4.1 Sand Cap

The confirmation samples for the sand cap materials installed by EPA over the former building footprint at the Elm Street Area will be compared to the most stringent SCL of 1 mg/kg total PCBs. If the samples collected from the sand cap meet this criterion, the sand cap material can be used as general subsurface backfill at either the Elm or Mill Street Areas (although the Final Design Report contemplates that this material will be used as subsurface backfill at the Elm Street Area). (Note that sand cap materials will not be used as topsoil associated with the final surface restoration at either area, or for the restoration of any residential property. Material used for these purposes will be obtained from off-site sources.) If any of the sand cap materials fail to meet the stringent 1 mg/kg total PCB criterion, but does meet less stringent SCLs (i.e., 100 mg/kg total PCBs for subsurface soils at the Elm Street Area), such sand cap materials may only be considered for use as general subsurface (i.e., deeper than 1 foot) backfill at the Elm Street Area, subject to the following conditions:

- For use within a designated utility corridor at the Elm Street Area, the sand cap material must pass the subsurface SCL of 25 mg/kg total PCBs set by EPA in the ROD (as amended) for the OU-1 soil remedy; and

- For use within a potential tree planting corridor at the Elm Street Area, the sand cap material must pass the subsurface SCL of 25 mg/kg total PCBs set by EPA in its February 27, 2007 letter.

Once the sand cap materials have been verified to meet the applicable SCL(s), those materials will be transported to excavation areas for backfilling in accordance with Section 5 of the Final Design Report. Any sand cap materials that fail to achieve any of the applicable SCLs will be transported off-site for disposal.

4.2.4.2 Imported Soil Backfill Materials

If the verification samples associated with the potential soil backfill sources indicate the presence of organic constituents or the presence of inorganic constituents at levels greater than expected from natural background, the data will be reviewed to determine if the source should be resampled or rejected. At a minimum, each soil backfill material will meet the surface and subsurface SCLs set by the EPA in the ROD (as amended) for OU-1 and the first Explanation of Significant Differences (ESD). This includes total PCBs less than 1 mg/kg, benzo(a)anthracene less than 2.1 mg/kg, benzo(a)pyrene less than 0.2 mg/kg, benzo(b)fluoranthene less than 2.0 mg/kg, and arsenic less than 11 mg/kg. If the potential soil backfill source is rejected, the Remedial Action

Contractor will be responsible for identifying another source for the materials in question.

4.2.5 Residential Properties Adjacent to Work Areas

If the confirmation sample results for a residential property indicate that total PCBs are not present at concentrations greater than the surface soil SCL of 1 mg/kg, then that property will be considered to not have been impacted by the performance of the Remedial Action. However, if the confirmation sample results for a particular property indicate that total PCBs are present at greater than 1 mg/kg, then additional evaluation, sampling, and potentially Remedial Action are warranted. Specifically, the confirmation sample result(s) will be reviewed to ensure that the confirmation sample was collected, handled, and analyzed correctly. This process will include review of the field notes and any QA/QC results that were performed in conjunction with that confirmation sample. If the confirmation sample results are determined to be unusable, then the confirmation sampling associated with that property will be repeated. If the confirmation sampling results are determined to be usable, then grab samples will be collected at the same locations as for the composite confirmation sample. Consistent with the procedures specified in Section 3.2, each grab sample will be collected from the top 6 inches of soil (i.e., non-grass/turf). These grab samples will be analyzed for total PCBs using EPA Method 8082A. The analytical results for these grab samples will be used to determine if additional sampling and/or Remedial Action is warranted.

4.2.6 Cleaned/Decontaminated Equipment

The surface wipe samples collected from the construction equipment subject to cleaning/decontamination in Section 3.3 will be compared to a value of 10 micrograms per 100 square centimeters ($\mu g/cm^2$), a level designated as acceptable under the Toxic Substances Control Act (TSCA) regulations. If confirmation wipe sample(s) for a piece of equipment demonstrate achievement of this criterion, the equipment will be considered to be sufficiently clean to be demobilized from the Site. However, should any wipe sample(s) fail to meet this criterion, the associated equipment will be subject to further equipment cleaning/decontamination and verification wipe sampling until the criterion is achieved and prior to demobilizing that equipment from the Site.

4.3 Reporting of Verification Sampling Data

At a minimum, it is anticipated that the verification sampling data will be presented to EPA in the Monthly Progress Reports, as required under the Unilateral Administrative

Order (UAO) issued to GE by EPA on July 16, 2001, as modified on August 15, 2001 and June 11, 2010. However, for any specific activities that will require timely EPA review and approval of the data and applicable evaluations (i.e., the results of confirmation soil samples for excavation bottoms and sidewalls), it is anticipated that such data will be provided to EPA as the data become available and prior to taking any action deemed appropriate based on evaluation of the data in accordance with this VSP. Finally, it is anticipated that the results of all of the verification sampling performed in accordance with this VSP will be included in the Final Construction Completion Report for the Remedial Action, which is required under the UAO (as modified).

Tables

TABLE A-1
ELM STREET AREA - VERIFICATION SAMPLING AREAS

VERIFICATION SAMPLING PLAN
FINAL (100%) DESIGN REPORT
FLETCHER'S PAINT WORKS AND STORAGE FACILITY SUPERFUND SITE
GENERAL ELECTRIC COMPANY - MILFORD, NEW HAMPSHIRE

Excavation Cell	Post Excavation Area (sq. feet)	% Site Area	Excavation Cell Designation	Verification Area Designation	Verification Cell Area	% of Verification Area	Verification Area % of Site[1]
A	17,149.91	17.1	A1	1	7,667.75	94.3	
			A2	--	--	--	--
			A3	2	5,681.39	66.4	
			A4	3	2,130.30	26.6	
B	459.50	0.5	B	1	459.50	5.7	10.0
C	1,338.94	1.3	C	2	1,338.94	15.6	
D	1,247.28	1.2	D	4	1,247.28	16.1	
E	617.66	0.6	E	2	617.66	7.2	
F	919.06	0.9	F	2	919.06	10.7	10.6
G	1,209.75	1.2	G	4	1,209.75	15.6	
H	2,383.95	2.4	H	5	2,047.15	22.6	
I	10,672.58	10.7	I1	4	5,280.39	68.2	9.5
			I2	6	5,392.19	66.0	
J	4,877.44	4.9	J	5	4,877.44	53.7	
K	2,220.11	2.2	K	5	2,151.72	23.7	11.2
L	2,492.54	2.5	L	3	1,616.35	20.2	
M	6,183.07	6.2	M	7	3,152.72	41.4	
N	388.79	0.4	N	6	388.79	4.8	
O	791.86	0.8	O	6	625.67	7.7	
P	1,189.24	1.2	P	6	1,031.15	12.6	
Q	734.50	0.7	Q	6	734.50	9.0	10.1
R	4,097.52	4.1	R	7	4,022.57	52.8	
S	1,021.33	1.0	S	3	1,021.33	12.8	
T	665.10	0.7	T	7	443.49	5.8	9.4
U	380.80	0.4	U	3	239.32	3.0	
V	3,001.02	3.0	V	3	3,001.02	37.5	9.9
W	6,476.10	6.5	W	--	--	--	--
X	2,735.36	2.7	X1	8	2,298.06	28.5	
			X2	8	437.30	5.4	
Y	2,176.19	2.2	Y1	8	2,084.93	25.9	
			Y2	8	91.26	1.1	
Z	820.74	0.8	Z1	9	704.06	9.2	--
			Z2	9	31.46	0.4	
AA	1,570.00	1.6	AA	8	1,570.00	19.5	
BB	3,918.32	3.9	BB	8	1,262.09	15.7	
CC	307.24	0.3	CC	8	307.24	3.8	9.9
DD	180.15	0.2	DD	--	--	--	--
EE	588.78	0.6	EE	--	--	--	--
FF	6,927.01	6.9	FF	9	6,927.01	90.4	9.5
GG	44.36	0.04	GG	--	--	--	--
HH	124.16	0.12	HH	--	--	--	--
II	180.64	0.18	II	--	--	--	--
JJ	1,863.73	1.9	JJ1	10	85.96	1.1	
			JJ2	10	1,777.77	22.2	
KK	225.01	0.2	KK	--	--	--	--
LL	1,140.42	1.1	LL	10	1,140.42	14.2	
MM	824.30	0.8	MM	10	824.30	10.3	
NN	555.89	0.6	NN	--	--	--	--
OO	1,615.12	1.6	OO	10	1,615.12	20.1	
PP	2,018.17	2.0	PP	10	2,018.17	25.2	
QQ	584.75	0.6	QQ	10	555.63	6.9	9.9
RR	1,201.50	1.2	RR	--	--	--	--
Total Area:	**100,119.89**				**81,028.21**		

Notes:
1. The values in this column represent the sum of all excavation cells within a verification area, expressed as a percentage of the total excavation area subject to confirmation sampling at the Elm Street Site.
2. ft = Feet.
3. sq. feet = Square feet.
4. -- = Excavation Cells M, Z, EE, GG, HH, JJ, MM, PP, SS are not required to have confirmatory sampling performed and is not considered in this evaluation.

TABLE A-2
ELM STREET AREA - COMPOSITE SAMPLE GRID SIZES

VERIFICATION SAMPLING PLAN
FINAL (100%) DESIGN REPORT
FLETCHER'S PAINT WORKS AND STORAGE FACILITY SUPERFUND SITE
GENERAL ELECTRIC COMPANY - MILFORD, NEW HAMPSHIRE

Excavation Cell	Verification Area (sq. feet)	10% Area (sq. feet)	Square Grid Length (ft)	Grid Area (sq. feet)	Number of Sample Grids	% Area Sampled
A1	7,667.75	766.78	10	100	9	11.7
A2	--	--	--	--	--	--
A3	5,681.39	568.14	11	121	5	10.6
A4	2,130.30	213.03	9	81	3	11.4
B	459.50	45.95	7	49	1	10.7
C	1,338.94	133.89	9	81	2	12.1
D	1,247.28	124.73	12	144	1	11.5
E	617.66	61.77	8	64	1	10.4
F	919.06	91.91	7	49	2	10.7
G	1,209.75	120.98	8	64	2	10.6
H	2,047.15	204.72	11	121	2	11.8
I1	5,280.39	528.04	9	81	7	10.7
I2	5,392.19	539.22	10	100	6	11.1
J	4,877.44	487.74	10	100	5	10.3
K	2,151.72	215.17	9	81	3	11.3
L	1,616.35	161.64	9	81	2	10.0
M	3,152.72	315.27	9	81	4	10.3
N	388.79	38.88	7	49	1	12.6
O	625.67	62.57	8	64	1	10.2
P	1,031.15	103.12	11	121	1	11.7
Q	734.50	73.45	9	81	1	11.0
R	4,022.57	402.26	9	81	5	10.1
S	1,021.33	102.13	11	121	1	11.8
T	443.49	44.35	7	49	1	11.0
U	239.32	23.93	5	25	1	10.4
V	3,001.02	300.10	11	121	3	12.1
W	--	--	--	--	--	--
X1	2,298.06	229.81	11	121	2	10.5
X2	437.30	43.73	7	49	1	11.2
Y1	2,084.93	208.49	11	121	2	11.6
Y2	91.26	9.13	4	16	1	17.5
Z1	704.06	70.41	9	81	1	11.5
Z2	31.46	3.15	2	4	1	12.7
AA	1,570.00	157.00	9	81	2	10.3
BB	1,262.09	126.21	12	144	1	11.4
CC	307.24	30.72	6	36	1	11.7
DD	--	--	--	--	--	--
EE	--	--	--	--	--	--
FF	6,927.01	692.70	10	100	8	11.5
GG	--	--	--	--	--	--
HH	--	--	--	--	--	--
II	--	--	--	--	--	--
JJ1	85.96	8.60	3	9	1	10.5
JJ2	1,777.77	177.78	10	100	2	11.3
KK	--	--	--	--	--	--
LL	1,140.42	114.04	8	64	2	11.2
MM	824.30	82.43	10	100	1	12.1
NN	--	--	--	--	--	--
OO	1,615.12	161.51	13	169	1	10.5
PP	2,018.17	201.82	11	121	2	12.0
QQ	555.63	55.56	8	64	1	11.5
RR	--	--	--	--	--	--
Total Area:	**81,028.21**					

Notes:
1. ft = Feet.
2. sq. feet = Square feet.
3. -- = Excavation Cells A2, W, DD, EE, GG, HH, II, KK, NN, RR are not required to have confirmatory sampling performed and is not considered in this evaluation.
4. Grid size was rounded to the nearest foot.

TABLE A-3
SUMMARY OF PRE-CONSTRUCTION VERIFICATION PCB SOIL SAMPLE DATA- ELM STREET AREA

FINAL (100%) DESIGN REPORT
FLETCHER'S PAINT WORKS AND STORAGE FACILITY SUPERFUND SITE
GENERAL ELECTRIC COMPANY - MILFORD, NEW HAMPSHIRE

Location ID: Sample Depth(Feet): Date Collected:	Units	SW-D1-D2 4 - 6 05/01/12	SW-D1-D2 8 - 10 05/01/12	SW-D3-D4 4 - 6 04/26/12	SW-D3-D4 8 - 10 05/01/12	SW-D5-D6 4 - 6 04/26/12	SW-D5-D6 8 - 10 04/27/12	SW-G1-G2 7 - 9 04/20/12	SW-G1-G2 12 - 14 04/20/12	SW-G3-G4 7 - 9 04/18/12	SW-G3-G4 12 - 14 04/18/12	SW-G5-G6 5 - 7 10/05/12
PCBs												
Aroclor 1016	mg/kg	ND(0.23)	ND(0.26)	ND(24)	ND(1.5)	ND(24)	ND(5.0) [ND(57)]	ND(19)	ND(110)	ND(120)	ND(120)	ND(0.22)
Aroclor 1221	mg/kg	ND(0.23)	ND(0.26)	ND(24)	ND(1.5)	ND(24)	ND(5.0) [ND(57)]	ND(19)	ND(110)	ND(120)	ND(120)	ND(0.22)
Aroclor 1232	mg/kg	ND(0.23)	ND(0.26)	ND(24)	ND(1.5)	ND(24)	ND(5.0) [ND(57)]	ND(19)	ND(110)	ND(120)	ND(120)	ND(0.22)
Aroclor 1242	mg/kg	ND(0.23)	0.53 J	ND(24)	21 J	ND(24)	ND(5.0) [42 J]	ND(19)	ND(110)	3,400 J	720 J	1.4
Aroclor 1248	mg/kg	ND(0.23)	ND(0.26)	47 J	ND(1.5)	10 J	50 J [ND(57)]	720 J	150 J	ND(120)	ND(120)	ND(0.22)
Aroclor 1254	mg/kg	ND(0.23)	ND(0.26)	ND(24)	ND(1.5)	ND(24)	ND(5.0) [ND(57)]	ND(19)	ND(110)	ND(120)	ND(120)	ND(0.22)
Aroclor 1260	mg/kg	ND(0.23)	ND(0.26)	ND(24)	ND(1.5)	ND(24)	ND(5.0) [ND(57)]	ND(19)	ND(110)	ND(120)	ND(120)	ND(0.22)
Total PCBs	mg/kg	ND(0.23)	0.53 J	47 J	21 J	10 J	50 J [42 J]	720 J	150 J	3,400 J	720 J	1.4
Miscellaneous Parameters												
% Moisture	%	10.0	12.0	13.0	26.0	9.40	15.0 [17.0]	7.60	18.0	13.0	17.0	5.00
% Solids	%	90.0	88.0	87.0	74.0	91.0	85.0 [83.0]	92.0	82.0	87.0	83.0	95.0

TABLE A-3
SUMMARY OF PRE-CONSTRUCTION VERIFICATION PCB SOIL SAMPLE DATA- ELM STREET AREA

FINAL (100%) DESIGN REPORT
FLETCHER'S PAINT WORKS AND STORAGE FACILITY SUPERFUND SITE
GENERAL ELECTRIC COMPANY - MILFORD, NEW HAMPSHIRE

Location ID: Sample Depth(Feet): Date Collected:	Units	SW-G5-G6 7 - 9 10/05/12	SW-G5-G6 9 - 11 10/05/12	SW-G5-G6 11 - 12 10/05/12	SW-G5-G6 12 - 14 10/05/12	SW-G5-G6 14 - 16 10/05/12	SW-G7-G8 5 - 7 10/01/12	SW-G7-G8 7 - 9 10/01/12	SW-G7-G8 9 - 11 10/01/12	SW-G7-G8 11 - 12 10/01/12	SW-G7-G8 12 - 14 10/01/12	SW-G7-G8 14 - 16 10/01/12
PCBs												
Aroclor 1016	mg/kg	ND(43)	ND(2.3)	ND(0.24)	ND(1.1)	ND(0.27)	ND(55) [ND(49)]	ND(1,100)	ND(0.27)	ND(0.27)	ND(0.31)	ND(0.27)
Aroclor 1221	mg/kg	ND(43)	ND(2.3)	ND(0.24)	ND(1.1)	ND(0.27)	ND(55) [ND(49)]	ND(1,100)	ND(0.27)	ND(0.27)	ND(0.31)	ND(0.27)
Aroclor 1232	mg/kg	ND(43)	ND(2.3)	ND(0.24)	ND(1.1)	ND(0.27)	ND(55) [ND(49)]	ND(1,100)	ND(0.27)	ND(0.27)	ND(0.31)	ND(0.27)
Aroclor 1242	mg/kg	98 J	20 J	1.0	7.3 J	ND(0.27)	75 JN [350 J]	31,000 J	ND(0.27)	ND(0.27)	7.0	ND(0.27)
Aroclor 1248	mg/kg	ND(43)	ND(2.3)	ND(0.24)	ND(1.1)	ND(0.27)	ND(55) [ND(49)]	ND(1,100)	ND(0.27)	ND(0.27)	ND(0.31)	ND(0.27)
Aroclor 1254	mg/kg	ND(43)	ND(2.3)	ND(0.24)	ND(1.1)	ND(0.27)	ND(55) [ND(49)]	ND(1,100)	ND(0.27)	ND(0.27)	ND(0.31)	ND(0.27)
Aroclor 1260	mg/kg	ND(43)	ND(2.3)	ND(0.24)	ND(1.1)	ND(0.27)	ND(55) [ND(49)]	ND(1,100)	ND(0.27)	ND(0.27)	ND(0.31)	ND(0.27)
Total PCBs	mg/kg	98 J	20 J	1.0	7.3 J	ND(0.27)	75 JN [350 J]	31,000 J	ND(0.27)	ND(0.27)	7.0	ND(0.27)
Miscellaneous Parameters												
% Moisture	%	6.20	4.50	6.30	11.0	15.0	14.0 [16.0]	8.60	12.0	11.0	21.0	14.0
% Solids	%	94.0	95.0	94.0	89.0	85.0	86.0 [84.0]	91.0	88.0	89.0	79.0	86.0

TABLE A-3
SUMMARY OF PRE-CONSTRUCTION VERIFICATION PCB SOIL SAMPLE DATA- ELM STREET AREA

FINAL (100%) DESIGN REPORT
FLETCHER'S PAINT WORKS AND STORAGE FACILITY SUPERFUND SITE
GENERAL ELECTRIC COMPANY - MILFORD, NEW HAMPSHIRE

Location ID: Sample Depth(Feet): Date Collected:	Units	SW-G9-G10 4 - 6 10/09/12	SW-G9-G10 6 - 8 10/09/12	SW-G9-G10 8 - 10 10/09/12	SW-G9-G10 10 - 12 10/09/12	SW-G11-G12 3 - 5 10/09/12	SW-G11-G12 5 - 7 10/09/12	SW-G11-G12 7 - 9 10/09/12	SW-G11-G12 9 - 11 10/09/12	SW-K1-K2 7 - 9 04/18/12	SW-K1-K2 11 - 13 04/18/12	SW-K3-K4 7 - 9 04/18/12
PCBs												
Aroclor 1016	mg/kg	ND(55)	ND(0.24)	ND(52)	ND(0.21)	ND(0.20)	ND(0.20)	ND(0.22)	ND(0.20)	ND(4.7)	ND(110)	ND(21)
Aroclor 1221	mg/kg	ND(55)	ND(0.24)	ND(52)	ND(0.21)	ND(0.20)	ND(0.20)	ND(0.22)	ND(0.20)	ND(4.7)	ND(110)	ND(21)
Aroclor 1232	mg/kg	ND(55)	ND(0.24)	ND(52)	ND(0.21)	ND(0.20)	ND(0.20)	ND(0.22)	ND(0.20)	ND(4.7)	ND(110)	ND(21)
Aroclor 1242	mg/kg	670 J	ND(0.24)	1,100 J	0.32 J	ND(0.20)	ND(0.20)	ND(0.22)	ND(0.20)	ND(4.7)	4,200 J	ND(21)
Aroclor 1248	mg/kg	ND(55)	9.5	ND(52)	ND(0.21)	0.19 J	ND(0.20)	0.097 J	0.16 J	38 J	ND(110)	100 J
Aroclor 1254	mg/kg	ND(55)	ND(0.24)	ND(52)	ND(0.21)	ND(0.20)	ND(0.20)	ND(0.22)	ND(0.20)	ND(4.7)	ND(110)	ND(21)
Aroclor 1260	mg/kg	ND(55)	ND(0.24)	ND(52)	ND(0.21)	ND(0.20)	ND(0.20)	ND(0.22)	ND(0.20)	ND(4.7)	ND(110)	ND(21)
Total PCBs	mg/kg	670 J	9.5	1,100 J	0.32 J	0.19 J	ND(0.20)	0.097 J	0.16 J	38 J	4,200 J	100 J
Miscellaneous Parameters												
% Moisture	%	11.0	4.20	26.0	3.10	9.30	7.00	8.00	8.20	13.0	16.0	15.0
% Solids	%	89.0	96.0	74.0	97.0	91.0	93.0	92.0	92.0	87.0	84.0	85.0

TABLE A-3
SUMMARY OF PRE-CONSTRUCTION VERIFICATION PCB SOIL SAMPLE DATA- ELM STREET AREA

FINAL (100%) DESIGN REPORT
FLETCHER'S PAINT WORKS AND STORAGE FACILITY SUPERFUND SITE
GENERAL ELECTRIC COMPANY - MILFORD, NEW HAMPSHIRE

Location ID: Sample Depth(Feet): Date Collected:	Units	SW-K3-K4 11 - 13 04/18/12	SW-K5-K6 3 - 5 10/02/12	SW-K5-K6 7 - 9 10/02/12	SW-K5-K6 9 - 11 10/02/12	SW-K5-K6 11 - 13 10/02/12	SW-K5-K6 13 - 15 10/02/12	SW-Q1-Q2 10 - 12 04/24/12	SW-Q1-Q2 16 - 18 04/24/12	SW-Q3-Q4 7 - 9 04/25/12	SW-Q3-Q4 12 - 14 04/25/12	SW-Q3-Q4 17 - 19 04/25/12
PCBs												
Aroclor 1016	mg/kg	ND(0.28) [ND(2.4)]	ND(0.24) [ND(0.19)]	ND(0.20)	ND(0.27)	ND(0.20)	ND(0.25)	ND(230)	ND(0.24)	ND(2.2)	ND(12)	ND(48)
Aroclor 1221	mg/kg	ND(0.28) [ND(2.4)]	ND(0.24) [ND(0.19)]	ND(0.20)	ND(0.27)	ND(0.20)	ND(0.25)	ND(230)	ND(0.24)	ND(2.2)	ND(12)	ND(48)
Aroclor 1232	mg/kg	ND(0.28) [ND(2.4)]	ND(0.24) [ND(0.19)]	ND(0.20)	ND(0.27)	ND(0.20)	ND(0.25)	ND(230)	ND(0.24)	ND(2.2)	ND(12)	ND(48)
Aroclor 1242	mg/kg	ND(0.28) [ND(2.4)]	1.1 J [ND(0.19)]	0.65 J	ND(0.27)	ND(0.20)	ND(0.25)	9,100 J	5.0	ND(2.2)	ND(12)	ND(48)
Aroclor 1248	mg/kg	10 J [19 J]	ND(0.24) [2.4 J]	ND(0.20)	ND(0.27)	ND(0.20)	ND(0.25)	ND(230)	ND(0.24)	8.3	180	56
Aroclor 1254	mg/kg	ND(0.28) [ND(2.4)]	ND(0.24) [ND(0.19)]	ND(0.20)	ND(0.27)	ND(0.20)	ND(0.25)	ND(230)	ND(0.24)	16	ND(12)	ND(48)
Aroclor 1260	mg/kg	0.68 JN [ND(2.4)]	ND(0.24) [ND(0.19)]	ND(0.20)	ND(0.27)	0.26 J	ND(0.25)	ND(230)	ND(0.24)	ND(2.2)	8.5 J	ND(48)
Total PCBs	mg/kg	11 JN [19 J]	1.1 J [2.4 J]	0.65 J	ND(0.27)	0.26 J	ND(0.25)	9,100 J	5.0	24	190 J	56
Miscellaneous Parameters												
% Moisture	%	29.0 [16.0]	8.40 [9.90]	13.0	12.0	6.60	15.0	7.00	18.0	18.0	15.0	12.0
% Solids	%	71.0 [84.0]	92.0 [90.0]	87.0	88.0	93.0	85.0	93.0	82.0	82.0	85.0	88.0

TABLE A-3
SUMMARY OF PRE-CONSTRUCTION VERIFICATION PCB SOIL SAMPLE DATA- ELM STREET AREA

FINAL (100%) DESIGN REPORT
FLETCHER'S PAINT WORKS AND STORAGE FACILITY SUPERFUND SITE
GENERAL ELECTRIC COMPANY - MILFORD, NEW HAMPSHIRE

Location ID: Sample Depth(Feet): Date Collected:	Units	SW-Q5 11 - 13 04/25/12	SW-Q5 14 - 16 04/25/12	SW-Q5 18 - 20 04/25/12	SW-Q6-Q7 10 - 12 04/24/12	SW-Q6-Q7 16 - 18 04/24/12	SW-Q8-Q9 8 - 10 10/02/12	SW-Q8-Q9 10 - 12 10/02/12	SW-Q8-Q9 12 - 14 10/02/12	SW-Q8-Q9 16 - 18 10/02/12	SW-Q10 6 - 8 10/02/12	SW-Q10 9 - 11 10/02/12
PCBs												
Aroclor 1016	mg/kg	ND(1.2)	ND(2.3)	ND(0.26)	ND(1.3)	ND(14)	ND(1.2)	ND(0.21)	ND(4.2)	ND(4.7)	ND(0.20)	ND(0.24)
Aroclor 1221	mg/kg	ND(1.2)	ND(2.3)	ND(0.26)	ND(1.3)	ND(14)	ND(1.2)	ND(0.21)	ND(4.2)	ND(4.7)	ND(0.20)	ND(0.24)
Aroclor 1232	mg/kg	ND(1.2)	ND(2.3)	ND(0.26)	ND(1.3)	ND(14)	ND(1.2)	ND(0.21)	ND(4.2)	ND(4.7)	ND(0.20)	ND(0.24)
Aroclor 1242	mg/kg	5.5 J	22 J	0.85 J	ND(1.3)	ND(14)	8.7 J	ND(0.21)	33 J	32 J	ND(0.20)	ND(0.24)
Aroclor 1248	mg/kg	ND(1.2)	ND(2.3)	ND(0.26)	24	38	ND(1.2)	0.43 J	ND(4.2)	ND(4.7)	ND(0.20)	ND(0.24)
Aroclor 1254	mg/kg	ND(1.2)	ND(2.3)	ND(0.26)	ND(1.3)	ND(14)	ND(1.2)	0.29 J	ND(4.2)	ND(4.7)	ND(0.20)	ND(0.24)
Aroclor 1260	mg/kg	ND(1.2)	ND(2.3)	ND(0.26)	ND(1.3)	ND(14)	ND(1.2)	ND(0.21)	ND(4.2)	ND(4.7)	ND(0.20)	ND(0.24)
Total PCBs	mg/kg	5.5 J	22 J	0.85 J	24	38	8.7 J	0.72 J	33 J	32 J	ND(0.20)	ND(0.24)
Miscellaneous Parameters												
% Moisture	%	16.0	14.0	13.0	22.0	19.0	8.20	6.40	8.20	12.0	2.30	3.00
% Solids	%	84.0	86.0	87.0	78.0	81.0	92.0	94.0	92.0	88.0	98.0	97.0

TABLE A-3
SUMMARY OF PRE-CONSTRUCTION VERIFICATION PCB SOIL SAMPLE DATA- ELM STREET AREA

FINAL (100%) DESIGN REPORT
FLETCHER'S PAINT WORKS AND STORAGE FACILITY SUPERFUND SITE
GENERAL ELECTRIC COMPANY - MILFORD, NEW HAMPSHIRE

Location ID: Sample Depth(Feet): Date Collected:	Units	SW-Q10 11 - 13 10/02/12	SW-Q10 13 - 15 10/02/12	SW-Q10 16 - 18 10/02/12	SW-V3-V4 18 - 20 05/02/12	SW-V3-V4 21 - 23 05/02/12	SW-V5-V6 14 - 16 04/30/12	SW-V5-V6 19 - 21 05/01/12	SW-V5-V6 22 - 24 05/01/12	SW-V7 17 - 19 04/30/12	SW-V7 21 - 23 04/30/12	SW-V8-V9 13 - 15 10/04/12
PCBs												
Aroclor 1016	mg/kg	ND(0.22)	ND(0.19)	ND(0.23)	ND(54)	ND(0.25)	ND(110)	ND(43)	ND(58)	ND(110)	ND(33)	ND(0.26)
Aroclor 1221	mg/kg	ND(0.22)	ND(0.19)	ND(0.23)	680 J	8.9 JN	ND(110)	ND(43)	ND(58)	ND(110)	ND(33)	ND(0.26)
Aroclor 1232	mg/kg	ND(0.22)	ND(0.19)	ND(0.23)	ND(54)	ND(0.25)	ND(110)	ND(43)	ND(58)	ND(110)	95 J	ND(0.26)
Aroclor 1242	mg/kg	ND(0.22)	2.0 J	ND(0.23)	ND(54)	1.1 J	720	910 J	270	1,000	ND(33)	0.33
Aroclor 1248	mg/kg	1.6	ND(0.19)	ND(0.23)	ND(54)	ND(0.25)	ND(110)	ND(43)	ND(58)	ND(110)	ND(33)	ND(0.26)
Aroclor 1254	mg/kg	1.4	2.3	ND(0.23)	27 J	ND(0.25)	ND(110)	ND(43)	ND(58)	ND(110)	13 J	ND(0.26)
Aroclor 1260	mg/kg	ND(0.22)	ND(0.19)	ND(0.23)	ND(54)	ND(0.25)	ND(110)	ND(43)	70	ND(110)	ND(33)	ND(0.26)
Total PCBs	mg/kg	3.0	4.3 J	ND(0.23)	710 J	10 JN	720	910 J	340	1,000	110 J	0.33
Miscellaneous Parameters												
% Moisture	%	3.60	3.60	5.70	23.0	29.0	12.0	17.0	24.0	13.0	28.0	9.30
% Solids	%	96.0	96.0	94.0	77.0	71.0	88.0	83.0	76.0	87.0	72.0	91.0

TABLE A-3
SUMMARY OF PRE-CONSTRUCTION VERIFICATION PCB SOIL SAMPLE DATA- ELM STREET AREA

FINAL (100%) DESIGN REPORT
FLETCHER'S PAINT WORKS AND STORAGE FACILITY SUPERFUND SITE
GENERAL ELECTRIC COMPANY - MILFORD, NEW HAMPSHIRE

Location ID: Sample Depth(Feet): Date Collected:	Units	SW-V8-V9 17 - 19 10/04/12	SW-V8-V9 19 - 21 10/04/12	SW-V8-V9 21 - 23 10/04/12	SW-V8-V9 23 - 24 10/04/12	SW-V10-V11 13 - 15 10/03/12	SW-V10-V11 15 - 17 10/03/12	SW-V10-V11 17 - 19 10/03/12	SW-V10-V11 19 - 20 10/03/12	SW-V10-V11 20 - 22 10/03/12	SW-V10-V11 22 - 23 10/03/12	SW-V10-V11 23 - 25 10/03/12
PCBs												
Aroclor 1016	mg/kg	ND(0.28)	ND(0.27)	ND(0.33)	ND(0.35)	ND(13)	ND(1.3)	ND(0.22)	ND(0.23) [ND(0.23)]	ND(2.2)	ND(0.24)	ND(0.23)
Aroclor 1221	mg/kg	ND(0.28)	ND(0.27)	ND(0.33)	ND(0.35)	ND(13)	ND(1.3)	ND(0.22)	ND(0.23) [ND(0.23)]	ND(2.2)	ND(0.24)	ND(0.23)
Aroclor 1232	mg/kg	ND(0.28)	ND(0.27)	ND(0.33)	ND(0.35)	ND(13)	ND(1.3)	ND(0.22)	ND(0.23) [ND(0.23)]	ND(2.2)	ND(0.24)	ND(0.23)
Aroclor 1242	mg/kg	5.1	3.5 J	0.74 J	ND(0.35)	37 J	15	0.12 J	0.058 J [0.065 J]	17 J	ND(0.24)	ND(0.23)
Aroclor 1248	mg/kg	ND(0.28)	ND(0.27)	ND(0.33)	ND(0.35)	ND(13)	ND(1.3)	ND(0.22)	ND(0.23) [ND(0.23)]	ND(2.2)	1.2	0.22 J
Aroclor 1254	mg/kg	8.2	ND(0.27)	ND(0.33)	ND(0.35)	ND(13)	ND(1.3)	ND(0.22)	ND(0.23) [ND(0.23)]	ND(2.2)	ND(0.24)	0.52
Aroclor 1260	mg/kg	ND(0.28)	ND(0.27)	ND(0.33)	ND(0.35)	ND(13)	ND(1.3)	ND(0.22)	ND(0.23) [ND(0.23)]	ND(2.2)	ND(0.24)	ND(0.23)
Total PCBs	mg/kg	13	3.5 J	0.74 J	ND(0.35)	37 J	15	0.12 J	0.058 J [0.065 J]	17 J	1.2	0.74 J
Miscellaneous Parameters												
% Moisture	%	17.0	16.0	30.0	32.0	12.0	12.0	12.0	13.0 [11.0]	11.0	17.0	16.0
% Solids	%	83.0	84.0	70.0	68.0	88.0	88.0	88.0	87.0 [89.0]	89.0	83.0	84.0

TABLE A-3
SUMMARY OF PRE-CONSTRUCTION VERIFICATION PCB SOIL SAMPLE DATA- ELM STREET AREA

FINAL (100%) DESIGN REPORT
FLETCHER'S PAINT WORKS AND STORAGE FACILITY SUPERFUND SITE
GENERAL ELECTRIC COMPANY - MILFORD, NEW HAMPSHIRE

Location ID: Sample Depth(Feet): Date Collected:	Units	SW-V10-V11 25 - 27 10/03/12	SW-V12 15 - 17 10/03/12	SW-V12 17 - 19 10/03/12	SW-V12 19 - 21 10/03/12	SW-V12 21 - 23 10/03/12	SW-V12 23 - 25 10/03/12	SW-V13 14 - 16 10/02/12	SW-V13 16 - 18 10/02/12	SW-V13 18 - 20 10/02/12	SW-V13 20 - 21 10/02/12	SW-V13 21 - 23 10/02/12
PCBs												
Aroclor 1016	mg/kg	ND(0.39)	ND(48)	ND(0.26)	ND(51)	ND(55)	ND(0.38)	ND(0.25)	ND(0.24)	ND(0.29)	ND(0.22)	ND(0.28)
Aroclor 1221	mg/kg	ND(0.39)	ND(48)	ND(0.26)	ND(51)	ND(55)	ND(0.38)	ND(0.25)	ND(0.24)	ND(0.29)	ND(0.22)	ND(0.28)
Aroclor 1232	mg/kg	ND(0.39)	ND(48)	ND(0.26)	ND(51)	ND(55)	ND(0.38)	ND(0.25)	ND(0.24)	ND(0.29)	ND(0.22)	ND(0.28)
Aroclor 1242	mg/kg	5.0 J	300 J	0.67 J	570	260 J	ND(0.38)	ND(0.25)	ND(0.24)	ND(0.29)	ND(0.22)	ND(0.28)
Aroclor 1248	mg/kg	ND(0.39)	ND(48)	ND(0.26)	ND(51)	ND(55)	0.46 J	ND(0.25)	6.7	ND(0.29)	0.086 J	ND(0.28)
Aroclor 1254	mg/kg	ND(0.39)	ND(48)	ND(0.26)	ND(51)	ND(55)	1.4 J	ND(0.25)	ND(0.24)	ND(0.29)	ND(0.22)	ND(0.28)
Aroclor 1260	mg/kg	ND(0.39)	ND(48)	ND(0.26)	ND(51)	ND(55)	1.2	ND(0.25)	ND(0.24)	ND(0.29)	ND(0.22)	ND(0.28)
Total PCBs	mg/kg	5.0 J	300 J	0.67 J	570	260 J	3.1 J	ND(0.25)	6.7	ND(0.29)	0.086 J	ND(0.28)
Miscellaneous Parameters												
% Moisture	%	44.0	7.70	14.0	10.0	17.0	43.0	10.0	7.30	21.0	9.00	13.0
% Solids	%	56.0	92.0	86.0	90.0	83.0	57.0	90.0	93.0	79.0	91.0	87.0

TABLE A-3
SUMMARY OF PRE-CONSTRUCTION VERIFICATION PCB SOIL SAMPLE DATA- ELM STREET AREA

FINAL (100%) DESIGN REPORT
FLETCHER'S PAINT WORKS AND STORAGE FACILITY SUPERFUND SITE
GENERAL ELECTRIC COMPANY - MILFORD, NEW HAMPSHIRE

Location ID: Sample Depth(Feet): Date Collected:	Units	SW-V13 23 - 24 10/02/12	SW-V13 24 - 26 10/02/12	SW-V13 26 - 28 10/02/12	SW-Z1-Z2 6 - 8 05/04/12	SW-Z1-Z2 11 - 13 05/04/12	SW-Z3-Z4 6 - 8 10/04/12	SW-Z3-Z4 9 - 11 10/04/12	SW-Z3-Z4 11 - 13 10/04/12	SW-Z3-Z4 13 - 15 10/04/12
PCBs										
Aroclor 1016	mg/kg	ND(0.29)	ND(0.45)	ND(0.33)	ND(0.26)	ND(25)	ND(0.22)	ND(0.22)	ND(0.23)	ND(0.23)
Aroclor 1221	mg/kg	ND(0.29)	ND(0.45)	ND(0.33)	ND(0.26)	ND(25)	ND(0.22)	ND(0.22)	ND(0.23)	ND(0.23)
Aroclor 1232	mg/kg	ND(0.29)	ND(0.45)	ND(0.33)	ND(0.26)	ND(25)	ND(0.22)	ND(0.22)	ND(0.23)	ND(0.23)
Aroclor 1242	mg/kg	ND(0.29)	ND(0.45)	ND(0.33)	ND(0.26)	ND(25)	ND(0.22)	ND(0.22)	ND(0.23)	ND(0.23)
Aroclor 1248	mg/kg	ND(0.29)	ND(0.45)	ND(0.33)	0.20 J	250	0.17 J	0.067 J	ND(0.23)	ND(0.23)
Aroclor 1254	mg/kg	ND(0.29)	ND(0.45)	ND(0.33)	ND(0.26)	ND(25)	ND(0.22)	ND(0.22)	ND(0.23)	ND(0.23)
Aroclor 1260	mg/kg	ND(0.29)	ND(0.45)	ND(0.33)	ND(0.26)	ND(25)	ND(0.22)	ND(0.22)	ND(0.23)	ND(0.23)
Total PCBs	mg/kg	ND(0.29)	ND(0.45)	ND(0.33)	0.20 J	250	0.17 J	0.067 J	ND(0.23)	ND(0.23)
Miscellaneous Parameters										
% Moisture	%	20.0	53.0	39.0	5.80	5.70	3.20	1.60	1.30	1.40
% Solids	%	80.0	47.0	61.0	94.0	94.0	97.0	98.0	99.0	99.0

Notes:
1. Samples were collected by ARCADIS and submitted to TestAmerica (formerly Severn Trent Laboratories) for analysis.
2. Field duplicate sample results are presented in brackets.
3. ND - Compound was not detected. The number in parentheses is the associated detection limit.
4. See Figure 8 for locations of pre-construction verification samples and Figure 11 for the revised locations of the excavations supports at the Elm Street Area.

Data Qualifiers:

J - The compound was positively identified; however, the associated numerical value is an estimated concentration.

N - The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification. The associated numerical value is an estimated concentration only.

TABLE A-4
ELM STREET AREA - SIDE WALL SAMPLING

VERIFICATION SAMPLING PLAN
FINAL (100%) DESIGN REPORT
FLETCHER'S PAINT WORKS AND STORAGE FACILITY SUPERFUND SITE
GENERAL ELECTRIC COMPANY - MILFORD, NEW HAMPSHIRE

Excavation Cell Requiring Support Structure	Proposed Soil Boring ID	Excavation Difference[1] (feet)	Sampling Interval[2]	Proposed Composite Sample ID[2]
A1	F1-F2	10	3-5'	SW-F1-F2 (3-5)
			8-10'	SW-F1-F2 (8-10)
L/U	W1-W2	15	10-12'	SW-W1-W2 (10-12)
			15-17'	SW-W1-W2 (15-17)
			20-22'	SW-W1-W2 (20-22)
PP	W3-W4	24	3-5'	SW-W3-W4 (3-5)
			8-10'	SW-W3-W4 (8-10)
			13-15'	SW-W3-W4 (13-15)
			18-20'	SW-W3-W4 (18-20)
			22-24'	SW-W3-W4 (22-24)

Note:
1. Depths measured from base of shallower excavation.
2. Certain wall segments require the compositing of samples collected from a boring at the top of the riverbank and a boring located some distance down the riverbank. In those instances, the specified sampling intervals are based upon the borings located at the top of the riverbank. The sampling interval for the borings advanced along the riverbank must correspond to the sampling intervals for the borings advanced at the top of the bank.

TABLE A-5
MILL STREET AREA - VERIFICATION SAMPLING AREAS

VERIFICATION SAMPLING PLAN
FINAL (100%) DESIGN REPORT
FLETCHER'S PAINT WORKS AND STORAGE FACILITY SUPERFUND SITE
GENERAL ELECTRIC COMPANY - MILFORD, NEW HAMPSHIRE

Excavation Cell	Post Excavation Area (sq. feet)	% Site Area	Excavation Cell Designation	Verification Area Designation	Cell Area	% of Verification Area	Verification Area % of Site[1]
A	1,593.86	6.4	A	1	1,593.86	59.2	
B	45.57	0.2	B1	1	45.57	1.7	
	68.37	0.3	B2	1	68.37	2.5	
C	160.14	0.6	C1	1	160.14	5.9	
	15.7	0.1	C2	1	15.7	0.6	
D	718.32	2.9	D	2	718.32	27.2	
E	809.72	3.3	E	1	809.72	30.1	10.8
F	122.3	0.5	F	2	122.3	4.6	
G	87.38	0.4	G	2	87.38	3.3	
H	831.54	--	--	--	--	--	
I	1713.68	6.9	I	2	1,713.68	64.9	10.6
J	4,826.21	19.4	J1	3	2,304.08	100	9.3
			J2	4	2,522.13	100	10.1
K	2204.4	8.9	K	5	2204.4	91.7	
L	198.27	0.8	L	5	198.27	8.3	9.6
M	2162.17	8.7	M	6	2162.17	88.4	
N	284.3	1.1	N	6	284.3	11.6	9.8
O	3,464.23	--	--	--	--	--	
P	260.6	1.0	P	7	260.60	11.8	
Q	67.42	0.3	Q	7	67.42	3.0	
R	564.07	2.3	R	7	564.07	25.5	
S	1602.11	6.4	S	8	1,602.11	63.1	
T	1323.1	5.3	T	7	1,323.10	59.7	8.9
U	2948.77	11.8	U	9	2,948.77	100	11.8
V	1,280.23	--	--	--	--	--	
1	408.64	1.6	1	10	408.64	18.7	
2	185.21	0.7	2	10	185.21	8.5	
3	1205.27	4.8	3	10	1,205.27	55.2	
4	36.56	0.1	4	10	36.56	1.7	
5	349.37	1.4	5	10	349.37	16.0	8.8
6	938.69	3.8	6	8	938.69	36.9	10.2
Total Area:	**30,476.20**				**20,182.60**		

Notes:
1. The values in this column represent the sum of all excavation cells within a verification area, expressed as a percentage of the total excavation area subject to confirmation sampling at the Mill Street Area.
2. ft. = Feet
3. sq. feet = Square feet.
4. -- = Excavation cells H, O, and V are not required to have confirmatory sampling performed and are not considered in this evaluation.

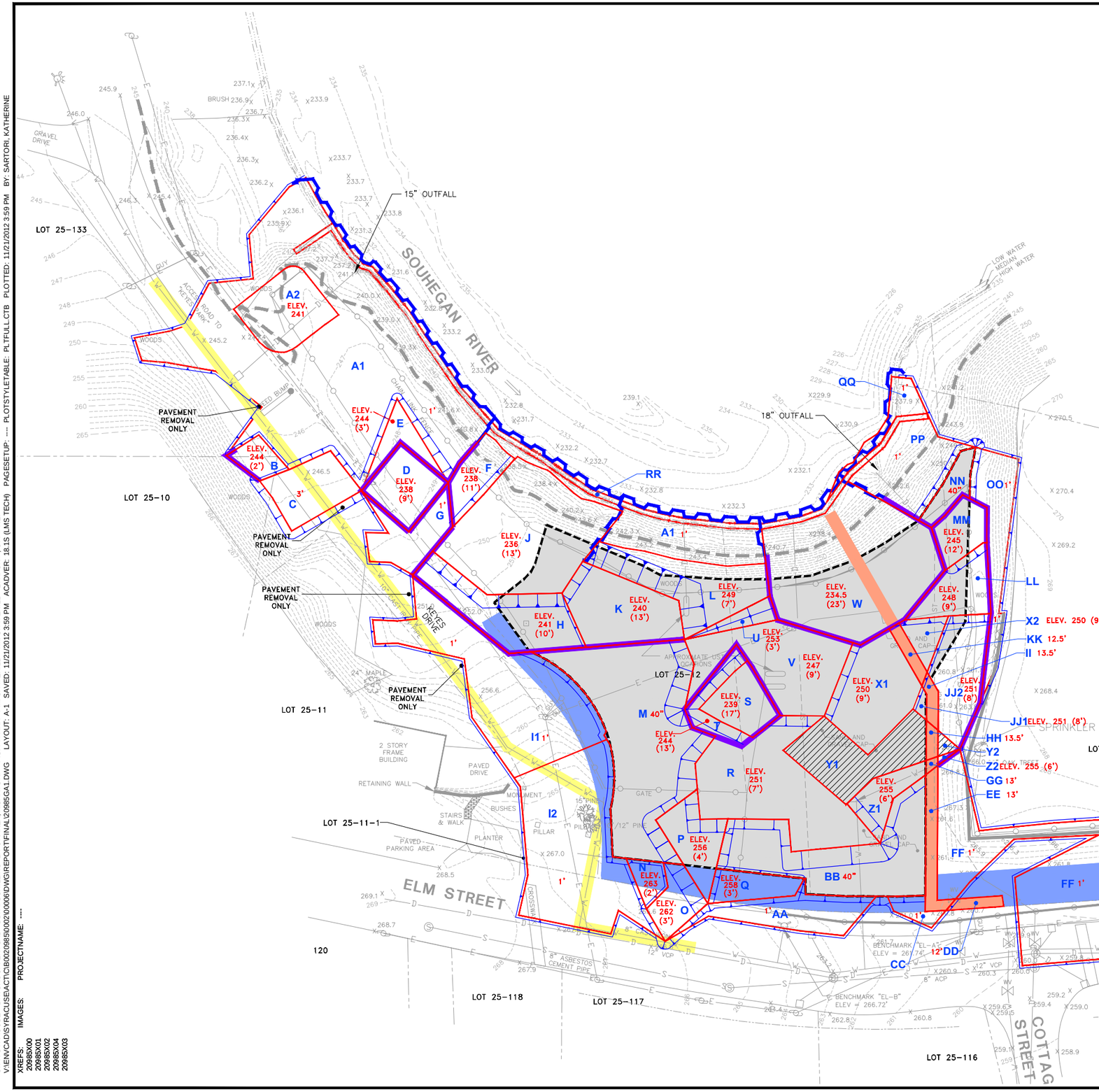
TABLE A-6
MILL STREET AREA - COMPOSITE SAMPLE GRID SIZES

VERIFICATION SAMPLING PLAN
FINAL (100%) DESIGN REPORT
FLETCHER'S PAINT WORKS AND STORAGE FACILITY SUPERFUND SITE
GENERAL ELECTRIC COMPANY - MILFORD, NEW HAMPSHIRE

Excavation Cell	Post Excavation Area (sq. feet)	10% Area (sq. feet)	Square Grid Length (ft)	Grid Area (sq. feet)	Number of Sample Grids	% Area Sampled
A	1,593.86	159.39	7	49	4	12.3
B1	45.57	4.56	3	9	1	19.7
B2	68.37	6.84	3	9	1	13.2
C1	160.14	16.01	5	25	1	15.6
C2	15.7	1.57	2	4	1	25.5
D	718.32	71.83	6	36	2	10.0
E	809.72	80.972	7	49	2	12.1
F	122.3	12.23	4	16	1	13.1
G	87.38	8.74	3	9	1	10.3
H	--	--	--	--	--	--
I	1,713.68	171.37	6	36	6	12.6
J1	2,304.08	230.41	5	25	10	10.9
J2	2,522.13	252.21	6	36	10	14.3
K	2,204.40	220.44	5	25	9	10.2
L	198.27	19.83	5	25	1	12.6
M	2,162.17	216.22	5	25	9	10.4
N	284.3	28.43	6	36	1	12.7
O	--	--	--	--	--	--
P	260.6	26.06	4	16	2	12.3
Q	67.42	6.74	3	9	1	13.3
R	564.07	56.41	6	36	2	12.8
S	1,602.11	160.21	6	36	6	13.5
T	1,323.10	132.31	6	36	5	13.6
U	2,948.77	294.88	6	36	10	12.2
V	--	--	--	--	--	--
1	408.64	40.86	5	25	2	12.2
2	185.21	18.52	5	25	1	13.5
3	1,205.27	120.53	6	36	4	11.9
4	36.56	3.66	2	4	1	10.9
5	349.37	34.94	5	25	2	14.3
6	938.69	93.87	5	25	4	10.7
Total Area:	**20,182.60**					

Notes:
1. ft = Feet.
2. sq. feet = Square feet.
3. -- = Excavation cells H, O and V are not required to have confirmatory sampling performed and are not considered in this evaluation.
4. Grid size was rounded to the nearest foot.

Figures



LEGEND FOR PRE-DESIGN INVESTIGATION AREA

- PROPERTY LINE
- UTILITY POLE
- CATCH BASIN
- SANITARY MANHOLE
- STORM MANHOLE
- WV WATER VALVE
- WM WATER METER
- TELEPHONE JACK
- 260 INDEX SURFACE ELEVATION CONTOUR
- 261 INTERMEDIATE SURFACE ELEVATION CONTOUR
- CHAIN LINK FENCE
- FIRE HYDRANT
- APPROXIMATE ELEVATION OF 100-YEAR FLOOD PLAIN
- EXCAVATION LIMITS
- A EXCAVATION CELL ID
- ELEV. 252 (4') BOTTOM OF EXCAVATION ELEVATION (DEPTH SHOWN IN PARENTHESES REPRESENTS APPROXIMATE DEPTH OF SAMPLE(S) REQUIRING REMOVAL AND IS PROVIDED FOR INFORMATIONAL PURPOSES ONLY).
- 40" DEPTH OF EXCAVATION
- EXCAVATION IN THIS AREA TO BE SLOPED BETWEEN HIGHER ELEVATIONS IN EXCAVATION CELLS TO SOUTH/WEST AND LOWER ELEVATIONS IN EXCAVATION CELLS TO THE NORTH/EAST
- APPROXIMATE AREA OF COVER SYSTEM
- EXISTING UTILITY CORRIDOR
- PROPOSED REPLACEMENT STORM SEWER
- PROPOSED TREE/SHRUB PLANTING CORRIDOR
- EXCAVATION SLOPING
- EXCAVATION SUPPORT WALL
- SOLDIER PILES

LEGEND FOR HISTORIC SOIL REMEDIATION AREA

- PRIOR 1-FOOT REMOVAL

NOTES:

1. ELEVATIONS BASED ON NORTH AMERICAN VERTICAL DATUM OF 1988.
2. HORIZONTAL DATUM BASED ON NEW HAMPSHIRE STATE PLANE COORDINATE SYSTEM OF 1983.
3. CONTOUR INTERVAL = 1 FEET.
4. MAP COMPILED FROM ACTUAL FIELD SURVEY PERFORMED BY BBL, INC. FROM JULY 16, 2003 THROUGH AUGUST 14, 2003, BY MERIDAN LAND SERVICES, INC. JANUARY 22, 2004, AND BY ARCADIS ON MAY 24, 2007.
5. A SAND AND GRAVEL CAP WAS PREVIOUSLY INSTALLED OVER THE MAJORITY OF THE ELM STREET AREA BY USEPA. DURING THE PDI, THE CAP WAS OBSERVED TO BE APPROXIMATELY ONE FOOT THICK AT MOST LOCATIONS ACROSS THE PROPERTY. AT OTHER LOCATIONS, APPROXIMATE CAP THICKNESSES WERE MEASURED AS FOLLOWS: 1.5 FEET AT EB-15SE, G06, M12, N18, O16, Q10, Q12E, Q16N, Q18, AND S14; TWO FEET AT O14, O18, AND Q12; FOUR FEET AT M16; FIVE FEET AT S18; AND UP TO SIX FEET ALONG THE CEMETERY WALL AS MEASURED AT P18E. THE SAND AND GRAVEL CAP WILL BE REMOVED DURING THE SITE PREPARATION PHASE.
6. EXCAVATION CELLS WITH NO ELEVATION REFERENCE SHALL BE EXCAVATED TO THE DESIGNATED DEPTH AS MEASURED FROM GROUND SURFACE OR THE GEOTEXTILE LAYER (IF WITHIN THE SAND CAP).
7. ELM STREET SITE PROPERTY LINE SHOWN WAS ESTABLISHED FROM DEEDS OF RECORD, SURVEY, AND EXISTING MONUMENTATION. OTHER PROPERTY LINES SHOWN WERE OBTAINED FROM TOWN OF MILFORD TAX MAP 25.

DRAFT
FOR EPA REVIEW

GENERAL ELECTRIC COMPANY
FLETCHER'S PAINT WORKS AND STORAGE FACILITY
SUPERFUND SITE - MILFORD, NEW HAMPSHIRE
FINAL (100%) DESIGN REPORT

ELM STREET AREA - COMBINED LIMITS OF EXCAVATION

ARCADIS

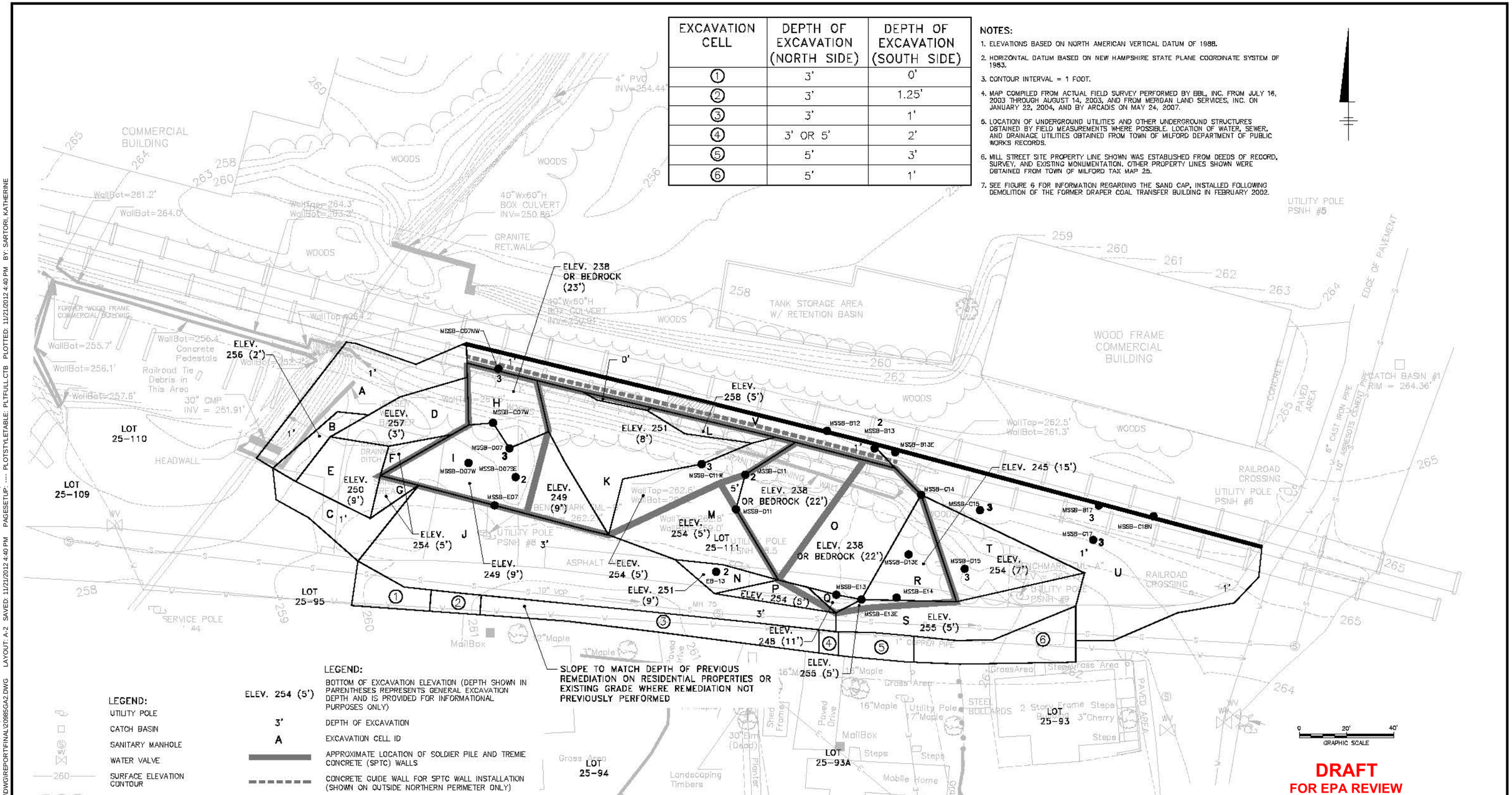
FIGURE
A-1

CITY: SYRACUSE DIV/GROUP: ENVCAD DB: A. SCHILLING L: FORAKER, K.SARTORI PIC: P. FARR PM: C. AVERILL TM: C. AVERILL LYR: ON=*; OFF=*REF*
V:\ENVCAD\SYRACUSE\ACT\CIB\0020985\0020\0006\DWG\REPORT\FINAL\20985GA1.DWG LAYOUT: A-1 SAVED: 11/21/2012 3:59 PM ACADVER: 18.1S (LMS TECH) PAGESETUP: ---- PLOTSTYLETABLE: PLTFULL.CTB PLOTTED: 11/21/2012 3:59 PM BY: SARTORI, KATHERINE
XREFS: 20985X00 20985X01 20985X02 20985X04 20985X03 IMAGES: PROJECTNAME: ----

EXCAVATION CELL	DEPTH OF EXCAVATION (NORTH SIDE)	DEPTH OF EXCAVATION (SOUTH SIDE)
1	3'	0'
2	3'	1.25'
3	3'	1'
4	3' OR 5'	2'
5	5'	3'
6	5'	1'

NOTES:

1. ELEVATIONS BASED ON NORTH AMERICAN VERTICAL DATUM OF 1988.
2. HORIZONTAL DATUM BASED ON NEW HAMPSHIRE STATE PLANE COORDINATE SYSTEM OF 1983.
3. CONTOUR INTERVAL = 1 FOOT.
4. MAP COMPILED FROM ACTUAL FIELD SURVEY PERFORMED BY BBL, INC. FROM JULY 16, 2003 THROUGH AUGUST 14, 2003, AND FROM MERIDAN LAND SERVICES, INC. ON JANUARY 22, 2004, AND BY ARCADIS ON MAY 24, 2007.
5. LOCATION OF UNDERGROUND UTILITIES AND OTHER UNDERGROUND STRUCTURES OBTAINED BY FIELD MEASUREMENTS WHERE POSSIBLE. LOCATION OF WATER, SEWER, AND DRAINAGE UTILITIES OBTAINED FROM TOWN OF MILFORD DEPARTMENT OF PUBLIC WORKS RECORDS.
6. MILL STREET SITE PROPERTY LINE SHOWN WAS ESTABLISHED FROM DEEDS OF RECORD, SURVEY, AND EXISTING MONUMENTATION. OTHER PROPERTY LINES SHOWN WERE OBTAINED FROM TOWN OF MILFORD TAX MAP 25.
7. SEE FIGURE 6 FOR INFORMATION REGARDING THE SAND CAP, INSTALLED FOLLOWING DEMOLITION OF THE FORMER DRAPER COAL TRANSFER BUILDING IN FEBRUARY 2002.



LEGEND:

- UTILITY POLE
- CATCH BASIN
- SANITARY MANHOLE
- WATER VALVE
- SURFACE ELEVATION CONTOUR
- EDGE OF TREES
- CHAIN LINK FENCE
- FIRE HYDRANT
- ASPHALT APRON INSTALLED DURING REMEDIAL ACTION PERFORMED IN 1995
- EXCAVATION LIMITS

LEGEND:

- ELEV. 254 (5') — BOTTOM OF EXCAVATION ELEVATION (DEPTH SHOWN IN PARENTHESES REPRESENTS GENERAL EXCAVATION DEPTH AND IS PROVIDED FOR INFORMATIONAL PURPOSES ONLY)
- 3' — DEPTH OF EXCAVATION
- A — EXCAVATION CELL ID
- APPROXIMATE LOCATION OF SOLDIER PILE AND TREMIE CONCRETE (SPTC) WALLS
- CONCRETE GUIDE WALL FOR SPTC WALL INSTALLATION (SHOWN ON OUTSIDE NORTHERN PERIMETER ONLY)
- ●2 — SOIL SAMPLING LOCATION AND NUMBER OF SAMPLES CONTAINING PCBs > 1ppm SCL AND NOT FULLY ADDRESSED BY LIMITS OF SOIL REMOVAL
- FOCUSED EXCAVATION
- INDICATES A 1 FOOT VERTICAL, 1.5 FOOT HORIZONTAL SLOPE
- PROPERTY LINE

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FLETCHER'S PAINT WORKS AND STORAGE FACILITY
SUPERFUND SITE - MILFORD, NEW HAMPSHIRE
FINAL (100%) DESIGN REPORT

MILL STREET AREA - EXCAVATION LIMITS AND SPTC WALL CONFIGURATION

ARCADIS

FIGURE
A-2

CITY: SYRACUSE DIV/GROUP: ENVCAD DB: A. SCHILLING L. FORAKER ,K.SARTORI PIC: P. FARR PM: C. AVERILL TM: C. AVERILL LYR: ON=*; OFF=*REF*
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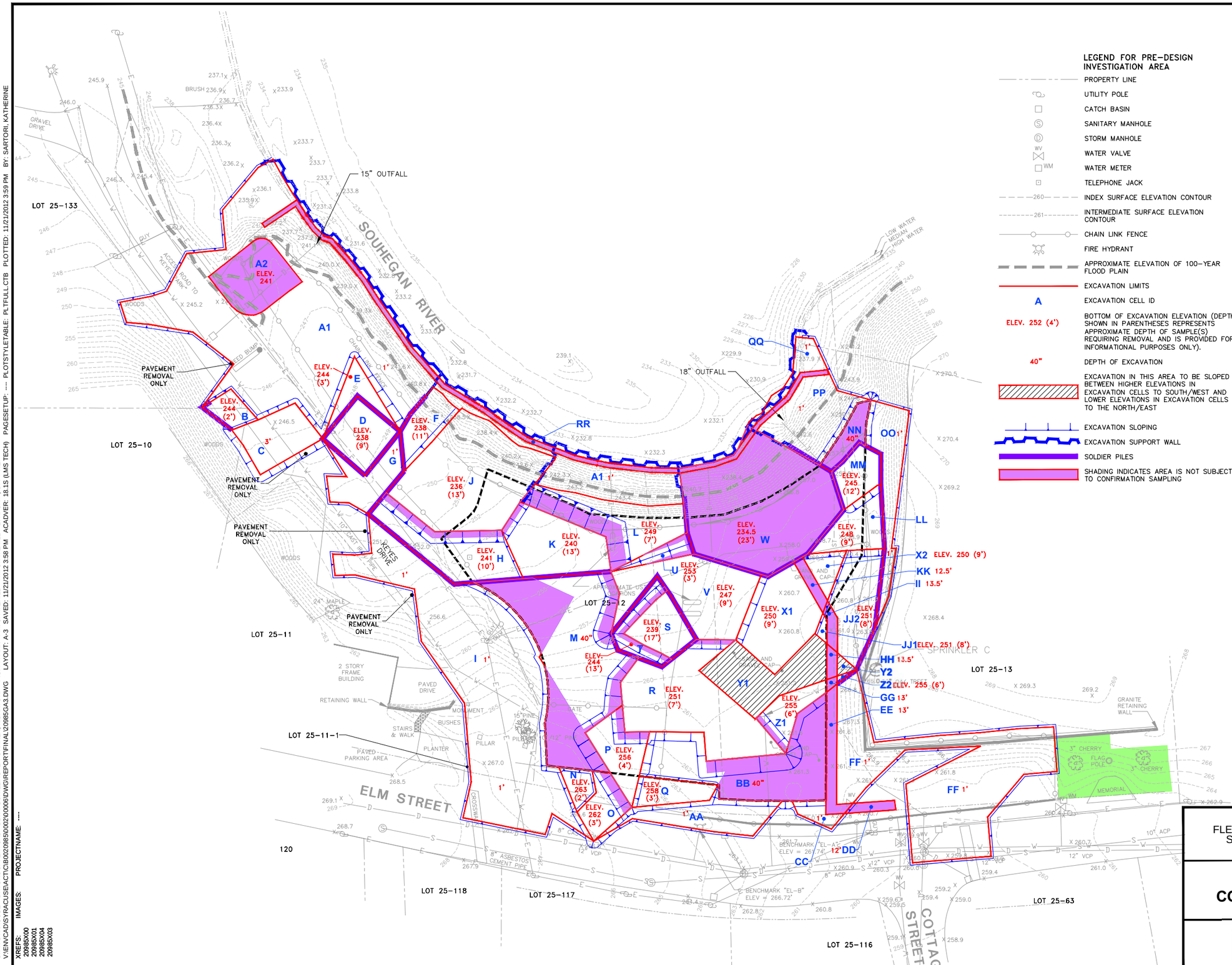

LEGEND FOR PRE-DESIGN INVESTIGATION AREA

- PROPERTY LINE
- UTILITY POLE
- CATCH BASIN
- SANITARY MANHOLE
- STORM MANHOLE
- WATER VALVE
- WATER METER
- TELEPHONE JACK
- INDEX SURFACE ELEVATION CONTOUR
- INTERMEDIATE SURFACE ELEVATION CONTOUR
- CHAIN LINK FENCE
- FIRE HYDRANT
- APPROXIMATE ELEVATION OF 100-YEAR FLOOD PLAIN
- EXCAVATION LIMITS
- A — EXCAVATION CELL ID
- ELEV. 252 (4') — BOTTOM OF EXCAVATION ELEVATION (DEPTH SHOWN IN PARENTHESES REPRESENTS APPROXIMATE DEPTH OF SAMPLE(S) REQUIRING REMOVAL AND IS PROVIDED FOR INFORMATIONAL PURPOSES ONLY).
- 40" — DEPTH OF EXCAVATION
- EXCAVATION IN THIS AREA TO BE SLOPED BETWEEN HIGHER ELEVATIONS IN EXCAVATION CELLS TO SOUTH/WEST AND LOWER ELEVATIONS IN EXCAVATION CELLS TO THE NORTH/EAST
- EXCAVATION SLOPING
- EXCAVATION SUPPORT WALL
- SOLDIER PILES
- SHADING INDICATES AREA IS NOT SUBJECT TO CONFIRMATION SAMPLING

LEGEND FOR HISTORIC SOIL REMEDIATION AREA

- PRIOR 1-FOOT REMOVAL

NOTES:

1. ELEVATIONS BASED ON NORTH AMERICAN VERTICAL DATUM OF 1988.
2. HORIZONTAL DATUM BASED ON NEW HAMPSHIRE STATE PLANE COORDINATE SYSTEM OF 1983.
3. CONTOUR INTERVAL = 1 FEET.
4. MAP COMPILED FROM ACTUAL FIELD SURVEY PERFORMED BY BBL, INC. FROM JULY 16, 2003 THROUGH AUGUST 14, 2003, BY MERIDAN LAND SERVICES, INC. JANUARY 22, 2004, AND BY ARCADIS ON MAY 24, 2007.
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6. EXCAVATION CELLS WITH NO ELEVATION REFERENCE SHALL BE EXCAVATED TO THE DESIGNATED DEPTH AS MEASURED FROM GROUND SURFACE OR THE GEOTEXTILE LAYER (IF WITHIN THE SAND CAP).
7. ELM STREET SITE PROPERTY LINE SHOWN WAS ESTABLISHED FROM DEEDS OF RECORD, SURVEY, AND EXISTING MONUMENTATION. OTHER PROPERTY LINES SHOWN WERE OBTAINED FROM TOWN OF MILFORD TAX MAP 25.

DRAFT
FOR EPA REVIEW

GENERAL ELECTRIC COMPANY
FLETCHER'S PAINT WORKS AND STORAGE FACILITY
SUPERFUND SITE - MILFORD, NEW HAMPSHIRE
FINAL (100%) DESIGN REPORT

ELM STREET AREA - COMBINED LIMITS OF EXCAVATION

ARCADIS

FIGURE
A-3

CITY: SYRACUSE DIV/GROUP: ENVCAD DB: A. SCHILLING L: FORAKER, K.SARTORI PIC: P. FARR PM: C. AVERILL TM: C. AVERILL LYR: ON=*; OFF=*REF*
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EXCAVATION CELL	DEPTH OF EXCAVATION (NORTH SIDE)	DEPTH OF EXCAVATION (SOUTH SIDE)
1	3'	0'
2	3'	1.25'
3	3'	1'
4	3' OR 5'	2'
5	5'	3'
6	5'	1'

NOTES:

1. ELEVATIONS BASED ON NORTH AMERICAN VERTICAL DATUM OF 1988.
2. HORIZONTAL DATUM BASED ON NEW HAMPSHIRE STATE PLANE COORDINATE SYSTEM OF 1983.
3. CONTOUR INTERVAL = 1 FOOT.
4. MAP COMPILED FROM ACTUAL FIELD SURVEY PERFORMED BY BBL, INC. FROM JULY 16, 2003 THROUGH AUGUST 14, 2003, AND FROM MERIDAN LAND SERVICES, INC. ON JANUARY 22, 2004, AND BY ARCADIS ON MAY 24, 2007.
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7. SEE FIGURE 6 FOR INFORMATION REGARDING THE SAND CAP, INSTALLED FOLLOWING DEMOLITION OF THE FORMER DRAPER COAL TRANSFER BUILDING IN FEBRUARY 2002.

LEGEND:

- UTILITY POLE
- CATCH BASIN
- SANITARY MANHOLE
- WATER VALVE
- SURFACE ELEVATION CONTOUR
- EDGE OF TREES
- CHAIN LINK FENCE
- FIRE HYDRANT
- ASPHALT APRON INSTALLED DURING REMEDIAL ACTION PERFORMED IN 1995
- EXCAVATION LIMITS
- A — EXCAVATION CELL ID

LEGEND:

- APPROXIMATE LOCATION OF SOLDIER PILE AND TREMIE CONCRETE (SPTC) WALLS
- CONCRETE GUIDE WALL FOR SPTC WALL INSTALLATION (SHOWN ON OUTSIDE NORTHERN PERIMETER ONLY)
- FOCUSED EXCAVATION
- INDICATES A 1 FOOT VERTICAL, 1.5 FOOT HORIZONTAL SLOPE
- PROPERTY LINE
- SHADING INDICATES AREA IS NOT SUBJECT TO CONFIRMATION SAMPLING

GRAPHIC SCALE 0 20' 40'

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FOR EPA REVIEW

GENERAL ELECTRIC COMPANY
FLETCHER'S PAINT WORKS AND STORAGE FACILITY
SUPERFUND SITE - MILFORD, NEW HAMPSHIRE
FINAL (100%) DESIGN REPORT

MILL STREET AREA
EXCAVATION CELLS NOT SUBJECT TO CONFIRMATION SAMPLING

ARCADIS

FIGURE
A-4

CITY: SYRACUSE DIV/GROUP: ENVCAD DB: L. FORAKER A. SCHILLING L. FORAKER LD: PIC: P. FARR PM: C. AVERILL TM: C. AVERILL LYR: ON=* OFF=*REF*
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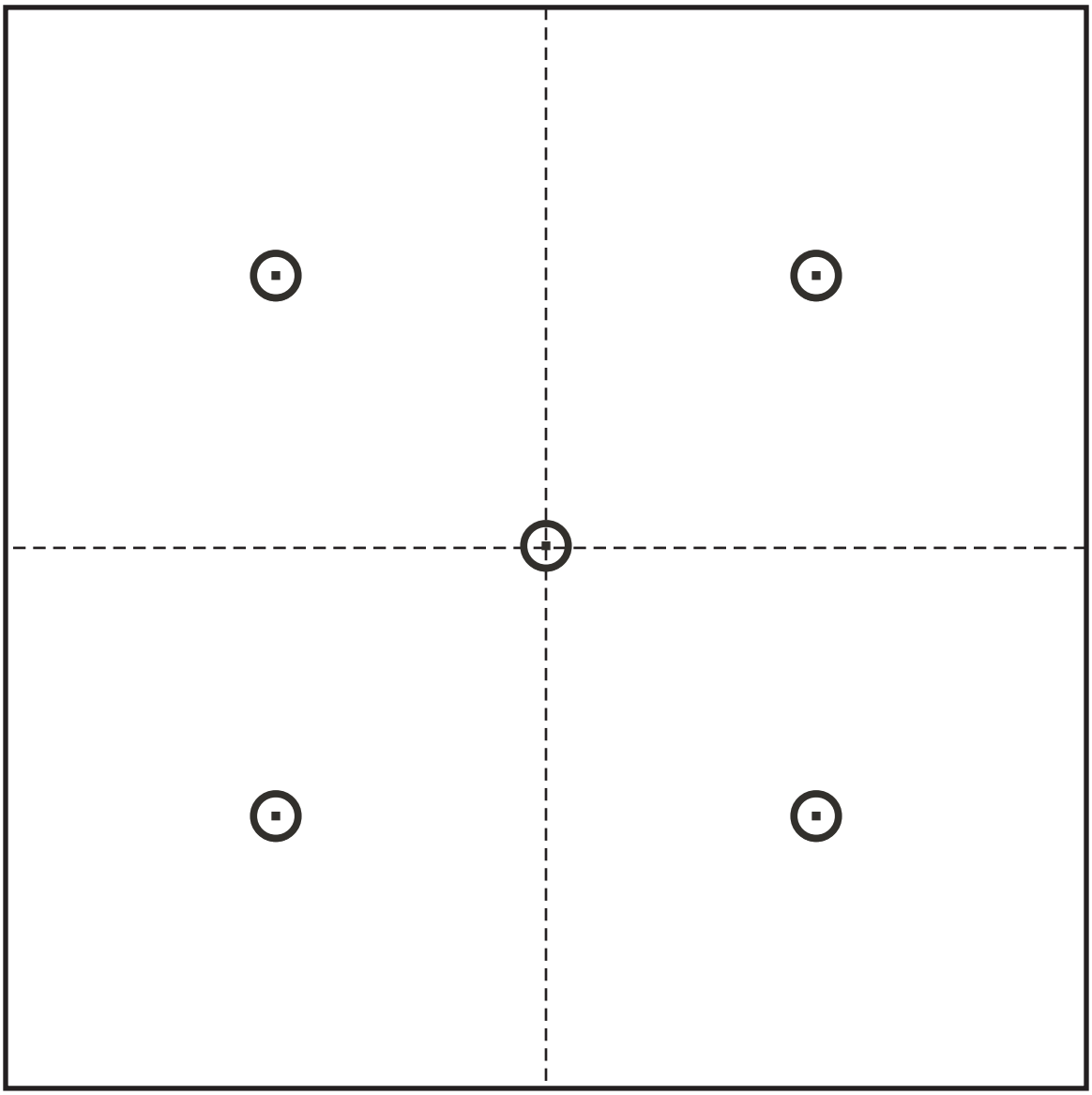

AN EXAMPLE 6' X 6' CONFIRMATORY
SAMPLE COMPOSITE GRID

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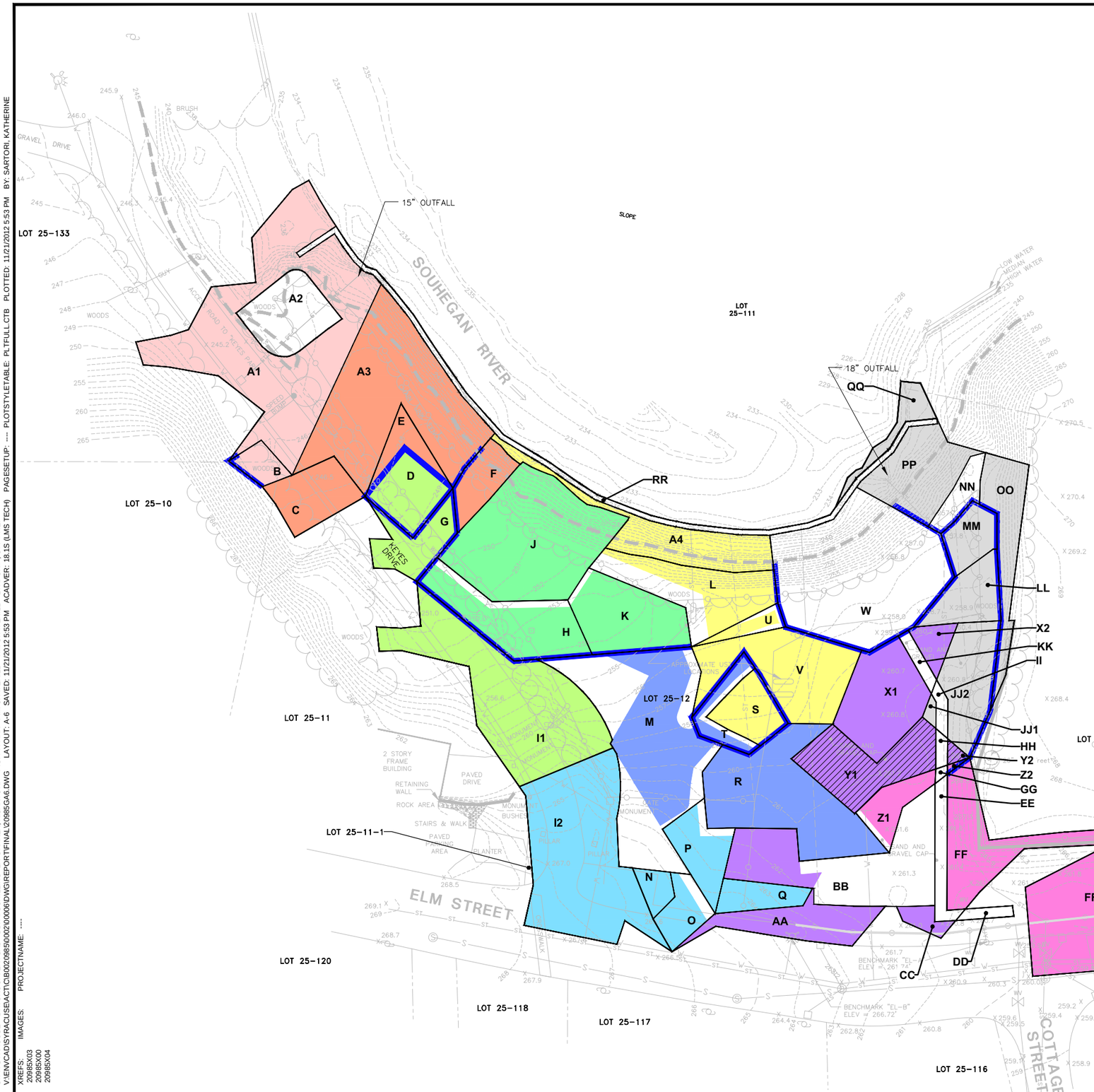
FLETCHER'S PAINT WORKS AND STORAGE FACILITY
SUPERFUND SITE - MILFORD, NEW HAMPSHIRE
FINAL (100%) DESIGN REPORT

SAMPLE COMPOSITE GRID FOR CONFIRMATORY SAMPLING

ARCADIS

FIGURE
A-5

11/06/2012 SYRACUSE-141ENV-DJHOWES, K.SARTORI
C:B0020985/0002/00006/REPORT/CDR/20985GA5.CDR



LEGEND:

- UTILITY POLE
- CATCH BASIN
- SANITARY MANHOLE
- STORM MANHOLE
- WATER VALVE
- WATER METER
- TELEPHONE JACK
- INDEX SURFACE ELEVATION CONTOUR
- INTERMEDIATE SURFACE ELEVATION CONTOUR
- CHAIN LINK FENCE
- FIRE HYDRANT
- DEPICTS APPROXIMATE ELEVATION OF 100-YEAR FLOOD PLAIN
- EXCAVATION LIMITS
- A — EXCAVATION CELL ID
- INDICATES AREA IS NOT SUBJECT TO CONFIRMATION SAMPLING
- SOLDIER PILE AND LAGGING SUPPORT
- INDICATES EXCAVATION SIDEWALL NOT SUBJECT TO CONFIRMATION SAMPLING
- EXCAVATION IN THIS AREA TO BE SLOPED BETWEEN HIGHER ELEVATIONS IN EXCAVATION CELLS TO SOUTH/WEST AND LOWER ELEVATIONS IN EXCAVATION CELLS TO THE NORTH/EAST
- VERIFICATION AREA 1
- VERIFICATION AREA 2
- VERIFICATION AREA 3
- VERIFICATION AREA 4
- VERIFICATION AREA 5
- VERIFICATION AREA 6
- VERIFICATION AREA 7
- VERIFICATION AREA 8
- VERIFICATION AREA 9
- VERIFICATION AREA 10

NOTES:

1. ELEVATIONS BASED ON NORTH AMERICAN VERTICAL DATUM OF 1988.
2. HORIZONTAL DATUM BASED ON NEW HAMPSHIRE STATE PLANE COORDINATE SYSTEM OF 1983.
3. CONTOUR INTERVAL = 1 FEET.
4. MAP COMPILED FROM ACTUAL FIELD SURVEY PERFORMED BY BBL, INC. FROM JULY 16, 2003 THROUGH AUGUST 14, 2003, BY MERIDAN LAND SERVICES, INC. JANUARY 22, 2004, AND BY ARCADIS ON MAY 24, 2007.
5. ELM STREET SITE PROPERTY LINE SHOWN WAS ESTABLISHED FROM DEEDS OF RECORD, SURVEY, AND EXISTING MONUMENTATION. OTHER PROPERTY LINES SHOWN WERE OBTAINED FROM TOWN OF MILFORD TAX MAP 25.

0 30' 60'
GRAPHIC SCALE

DRAFT
FOR EPA REVIEW

GENERAL ELECTRIC COMPANY
FLETCHER'S PAINT WORKS AND STORAGE FACILITY
SUPERFUND SITE - MILFORD, NEW HAMPSHIRE
FINAL (100%) DESIGN REPORT

ELM STREET AREA - VERIFICATION AREAS

ARCADIS

FIGURE
A-6

CITY: SYRACUSE DIV/GROUP: ENVCAD DB: A. SCHILLING L. FORAKER, K.SARTORI PIC: P. FARR PM: C. AVERILL TM: C. AVERILL LYR: ON=*; OFF=*REF*
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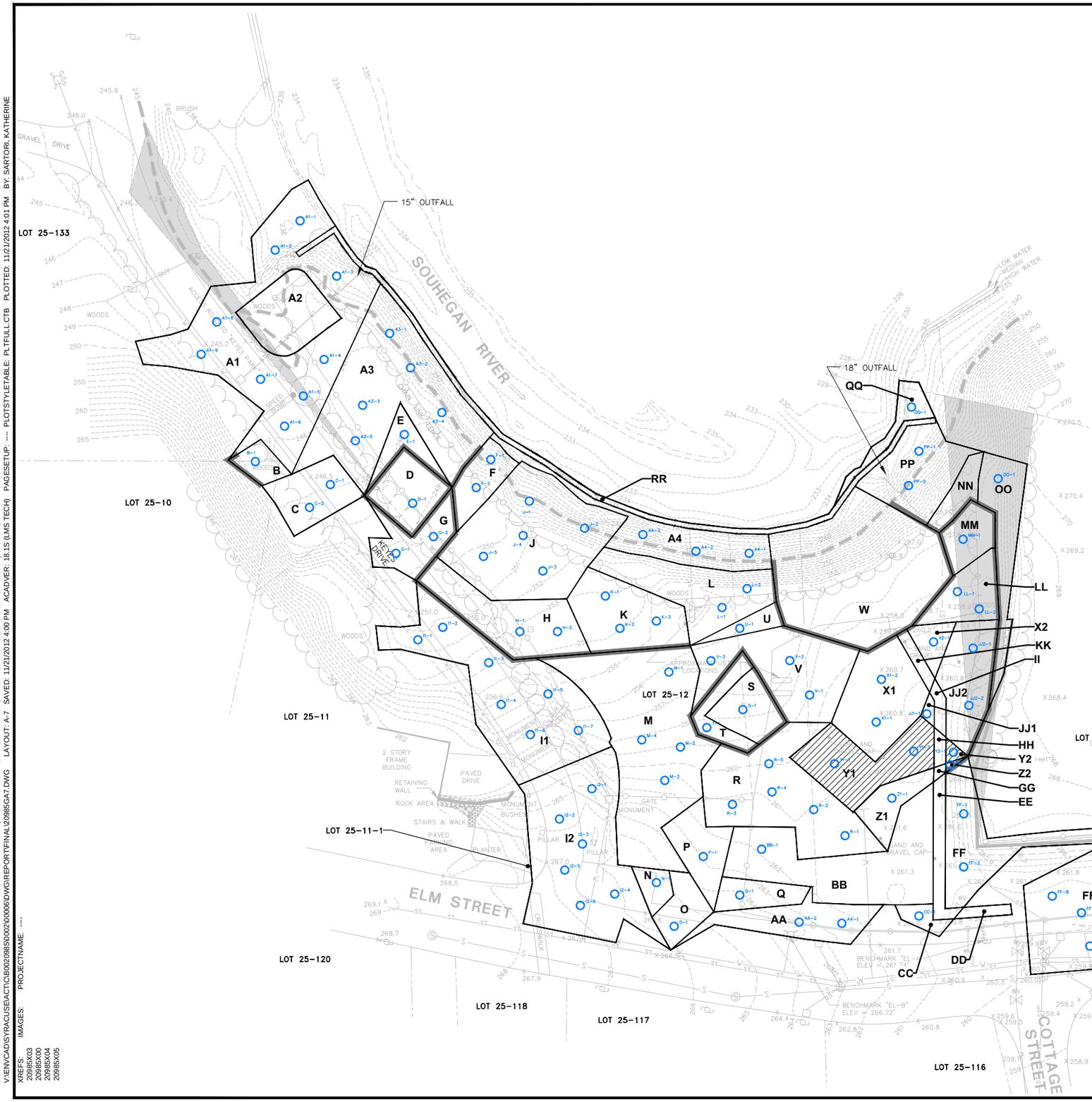

LEGEND:

- UTILITY POLE
- CATCH BASIN
- SANITARY MANHOLE
- STORM MANHOLE
- WATER VALVE
- WATER METER
- TELEPHONE JACK
- 260 — INDEX SURFACE ELEVATION CONTOUR
- 259 — INTERMEDIATE SURFACE ELEVATION CONTOUR
- CHAIN LINK FENCE
- FIRE HYDRANT
- DEPICTS APPROXIMATE ELEVATION OF 100-YEAR FLOOD PLAIN
- EXCAVATION LIMITS
- A — EXCAVATION CELL ID
- SOLDIER PILE AND LAGGING SUPPORT
- INDICATES EXCAVATION SIDEWALL NOT SUBJECT TO CONFIRMATORY SAMPLING
- EXCAVATION IN THIS AREA TO BE SLOPED BETWEEN HIGHER ELEVATIONS IN EXCAVATION CELLS TO SOUTH/WEST AND LOWER ELEVATIONS IN EXCAVATION CELLS TO THE NORTH/EAST
- PROPOSED SAMPLE LOCATION

NOTES:

1. ELEVATIONS BASED ON NORTH AMERICAN VERTICAL DATUM OF 1988.
2. HORIZONTAL DATUM BASED ON NEW HAMPSHIRE STATE PLANE COORDINATE SYSTEM OF 1983.
3. CONTOUR INTERVAL = 1 FEET.
4. MAP COMPILED FROM ACTUAL FIELD SURVEY PERFORMED BY BBL, INC. FROM JULY 16, 2003 THROUGH AUGUST 14, 2003, BY MERIDAN LAND SERVICES, INC. JANUARY 22, 2004, AND BY ARCADIS ON MAY 24, 2007.
5. ELM STREET SITE PROPERTY LINE SHOWN WAS ESTABLISHED FROM DEEDS OF RECORD, SURVEY, AND EXISTING MONUMENTATION. OTHER PROPERTY LINES SHOWN WERE OBTAINED FROM TOWN OF MILFORD TAX MAP 25.

0 30' 60'
GRAPHIC SCALE

DRAFT
FOR EPA REVIEW

GENERAL ELECTRIC COMPANY
FLETCHER'S PAINT WORKS AND STORAGE FACILITY
SUPERFUND SITE - MILFORD, NEW HAMPSHIRE
FINAL (100%) DESIGN REPORT

ELM STREET AREA - SAMPLE GRID AND PROPOSED CONFIRMATORY SAMPLE LOCATIONS

ARCADIS

FIGURE
A-7

CITY: SYRACUSE DIV/GROUP: ENVCAD DB: A. SCHILLING L: FORAKER, K.SARTORI PIC: P. FARR PM: C. AVERILL TM: C. AVERILL LYR: ON=*; OFF=*REF*
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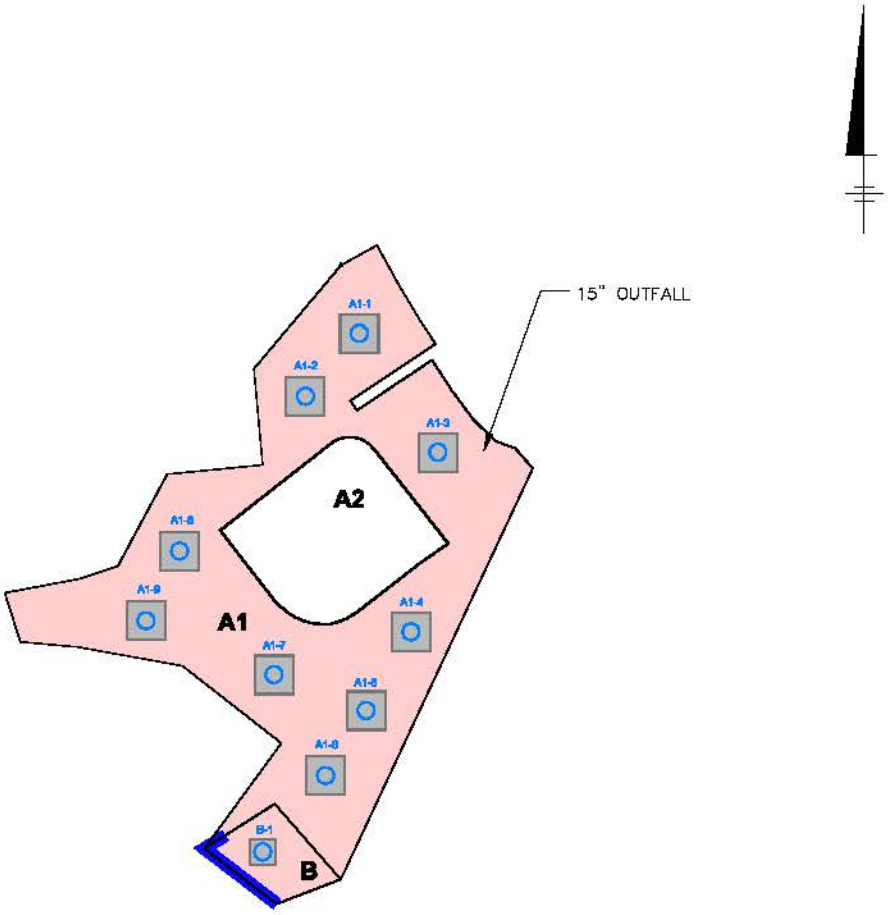

LEGEND:

———	EXCAVATION LIMITS
▬▬▬	SOLDIER PILE AND LAGGING SUPPORT
A1	EXCAVATION CELL ID
○	PROPOSED SAMPLE LOCATION

DRAFT
FOR EPA REVIEW

0 50' 100'
GRAPHIC SCALE

NOTES:

1. HORIZONTAL DATUM BASED ON NEW HAMPSHIRE STATE PLANE COORDINATE SYSTEM OF 1983.
2. MAP COMPILED FROM ACTUAL FIELD SURVEY PERFORMED BY BBL, INC. FROM JULY 16, 2003 THROUGH AUGUST 14, 2003, BY MERIDAN LAND SERVICES, INC. JANUARY 22, 2004, AND BY ARCADIS ON MAY 24, 2007.

GENERAL ELECTRIC COMPANY
FLETCHER'S PAINT WORKS AND STORAGE FACILITY
SUPERFUND SITE - MILFORD, NEW HAMPSHIRE
FINAL (100%) DESIGN REPORT

ELM STREET AREA - VERIFICATION AREA 1

ARCADIS

FIGURE
A-8

CITY:SYRACUSE, NY DIV/GROUP: ENV/CAD DB:AMS, K.SARTORI PIC:(Opt) PM:(Reqd) TM:C.AVERILL LYR:(Opt)ON=*;OFF=*REF*
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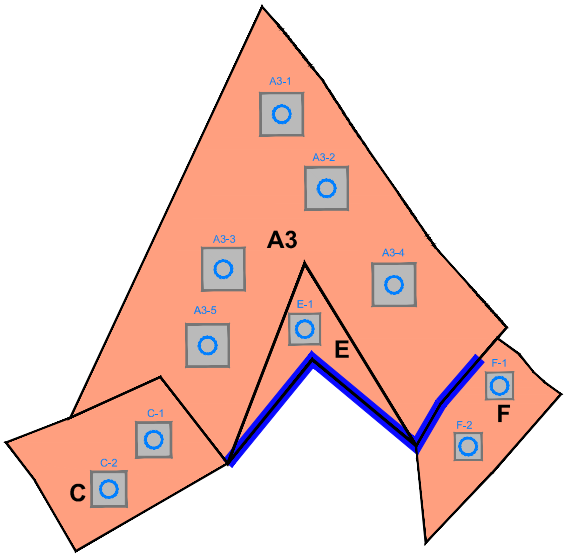


LEGEND:

———	EXCAVATION LIMITS
▬▬▬	SOLDIER PILE AND LAGGING SUPPORT
A3	EXCAVATION CELL ID
○	PROPOSED SAMPLE LOCATION

DRAFT
FOR EPA REVIEW

0 50' 100'
GRAPHIC SCALE

NOTES:

1. HORIZONTAL DATUM BASED ON NEW HAMPSHIRE STATE PLANE COORDINATE SYSTEM OF 1983.

2. MAP COMPILED FROM ACTUAL FIELD SURVEY PERFORMED BY BBL, INC. FROM JULY 16, 2003 THROUGH AUGUST 14, 2003, BY MERIDAN LAND SERVICES, INC. JANUARY 22, 2004, AND BY ARCADIS ON MAY 24, 2007.

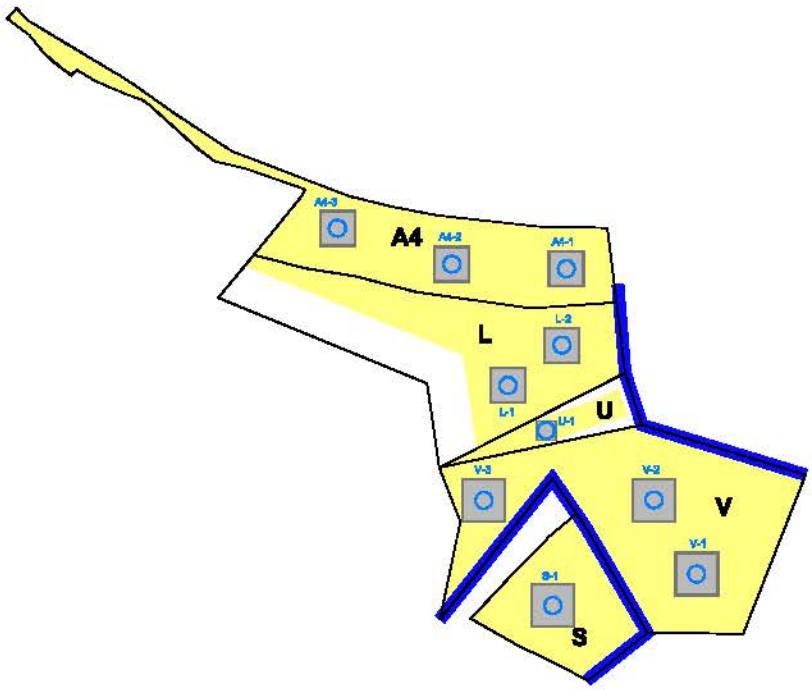
GENERAL ELECTRIC COMPANY
FLETCHER'S PAINT WORKS AND STORAGE FACILITY
SUPERFUND SITE - MILFORD, NEW HAMPSHIRE
FINAL (100%) DESIGN REPORT

ELM STREET AREA - VERIFICATION AREA 2

ARCADIS

FIGURE
A-9

CITY:SYRACUSE, NY DIV/GROUP: ENV/CAD DB:AMS, K.SARTORI PIC:(Opt) PM:(Reqd) TM:C.AVERILL LYR:(Opt)ON=*;OFF=*REF*
V:\ENVCAD\SYRACUSE\ACT\CB002985\00200006\DWG\REPORT\FINAL\20985GA9.DWG LAYOUT: A-9 SAVED: 11/21/2012 4:18 PM ACADVER: 18.1S (LMS TECH) PAGESETUP: PA-PDF PLOTSTYLETABLE: PLTFULL.CTB PLOTTED: 11/21/2012 4:18 PM BY: SARTORI, KATHERINE
XREFS: 20985XAP IMAGES: PROJECTNAME: ----



LEGEND:

———	EXCAVATION LIMITS
▬▬▬	SOLDIER PILE AND LAGGING SUPPORT
A4	EXCAVATION CELL ID
○	PROPOSED SAMPLE LOCATION

DRAFT
FOR EPA REVIEW

0 50' 100'
GRAPHIC SCALE

NOTES:

1. HORIZONTAL DATUM BASED ON NEW HAMPSHIRE STATE PLANE COORDINATE SYSTEM OF 1983.
2. MAP COMPILED FROM ACTUAL FIELD SURVEY PERFORMED BY BBL, INC. FROM JULY 16, 2003 THROUGH AUGUST 14, 2003, BY MERIDAN LAND SERVICES, INC. JANUARY 22, 2004, AND BY ARCADIS ON MAY 24, 2007.

GENERAL ELECTRIC COMPANY
FLETCHER'S PAINT WORKS AND STORAGE FACILITY
SUPERFUND SITE - MILFORD, NEW HAMPSHIRE
FINAL (100%) DESIGN REPORT

ELM STREET AREA - VERIFICATION AREA 3

ARCADIS

FIGURE
A-10

CITY:SYRACUSE, NY DIV/GROUP: ENV/CAD DB:AMS, K.SARTORI PIC:(Opt) PM:(Reqd) TM:C.AVERILL LYR:(Opt)ON=*;OFF=*REF*
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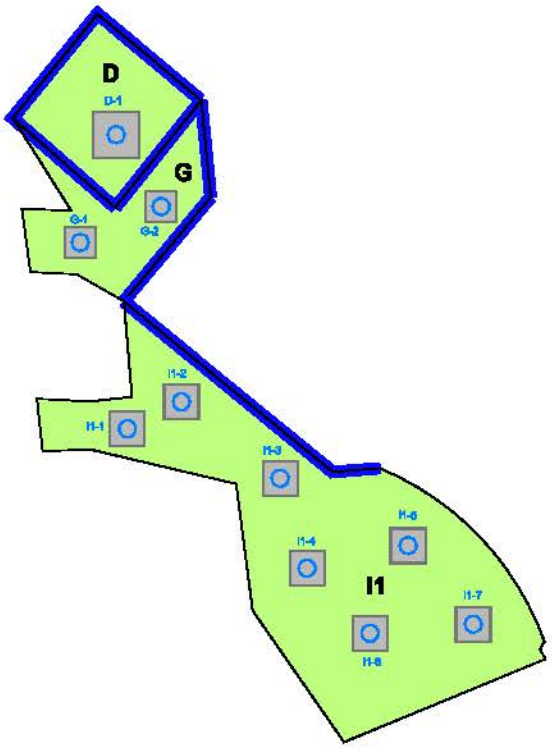
XREFS: IMAGES: PROJECTNAME: ----
20985XAP



LEGEND:

- EXCAVATION LIMITS
- SOLDIER PILE AND LAGGING SUPPORT
- D — EXCAVATION CELL ID
- PROPOSED SAMPLE LOCATION

DRAFT
FOR EPA REVIEW

0 50' 100'
GRAPHIC SCALE

NOTES:

1. HORIZONTAL DATUM BASED ON NEW HAMPSHIRE STATE PLANE COORDINATE SYSTEM OF 1983.
2. MAP COMPILED FROM ACTUAL FIELD SURVEY PERFORMED BY BBL, INC. FROM JULY 16, 2003 THROUGH AUGUST 14, 2003, BY MERIDAN LAND SERVICES, INC. JANUARY 22, 2004, AND BY ARCADIS ON MAY 24, 2007.

GENERAL ELECTRIC COMPANY
FLETCHER'S PAINT WORKS AND STORAGE FACILITY
SUPERFUND SITE - MILFORD, NEW HAMPSHIRE
FINAL (100%) DESIGN REPORT

ELM STREET AREA - VERIFICATION AREA 4

ARCADIS

FIGURE
A-11

CITY:SYRACUSE, NY DIV/GROUP: ENV/CAD DB:AMS, K.SARTORI PIC:(Opt) PM:(Reqd) TM:C.AVERILL LYR:(Opt)ON=*;OFF=*REF*
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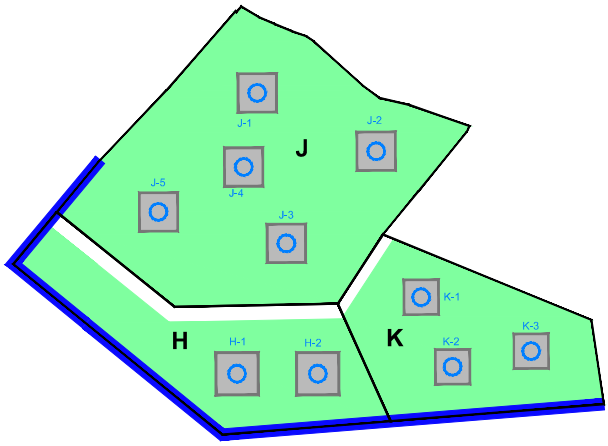
XREFS: IMAGES: PROJECTNAME: ----
20985XAP



LEGEND:

———	EXCAVATION LIMITS
▬▬▬	SOLDIER PILE AND LAGGING SUPPORT
H	EXCAVATION CELL ID
○	PROPOSED SAMPLE LOCATION

DRAFT
FOR EPA REVIEW

0 50' 100'
GRAPHIC SCALE

NOTES:

1. HORIZONTAL DATUM BASED ON NEW HAMPSHIRE STATE PLANE COORDINATE SYSTEM OF 1983.

2. MAP COMPILED FROM ACTUAL FIELD SURVEY PERFORMED BY BBL, INC. FROM JULY 16, 2003 THROUGH AUGUST 14, 2003, BY MERIDAN LAND SERVICES, INC. JANUARY 22, 2004, AND BY ARCADIS ON MAY 24, 2007.

GENERAL ELECTRIC COMPANY
FLETCHER'S PAINT WORKS AND STORAGE FACILITY
SUPERFUND SITE - MILFORD, NEW HAMPSHIRE
FINAL (100%) DESIGN REPORT

ELM STREET AREA - VERIFICATION AREA 5

ARCADIS

FIGURE
A-12

CITY:SYRACUSE, NY DIV/GROUP: ENV/CAD DB:AMS, K.SARTORI PIC:(Opt) PM:(Reqd) TM:C.AVERILL LYR:(Opt)ON=*;OFF=*REF*
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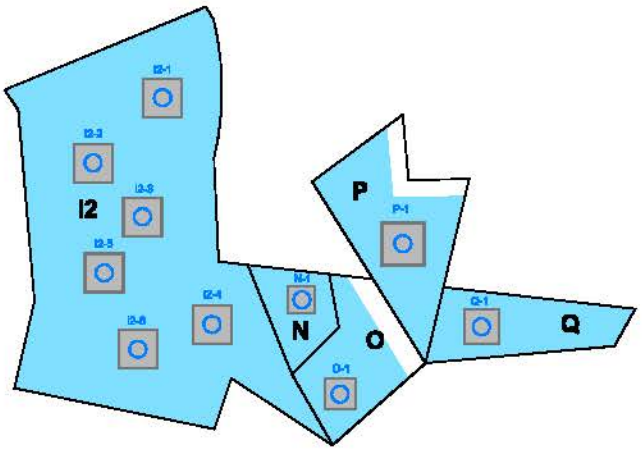
XREFS: 20985XAP IMAGES: PROJECTNAME: ----



LEGEND:

———	EXCAVATION LIMITS
Q	EXCAVATION CELL ID
○	PROPOSED SAMPLE LOCATION

DRAFT
FOR EPA REVIEW

0 50' 100'
GRAPHIC SCALE

NOTES:

1. HORIZONTAL DATUM BASED ON NEW HAMPSHIRE STATE PLANE COORDINATE SYSTEM OF 1983.
2. MAP COMPILED FROM ACTUAL FIELD SURVEY PERFORMED BY BBL, INC. FROM JULY 16, 2003 THROUGH AUGUST 14, 2003, BY MERIDAN LAND SERVICES, INC. JANUARY 22, 2004, AND BY ARCADIS ON MAY 24, 2007.

GENERAL ELECTRIC COMPANY
FLETCHER'S PAINT WORKS AND STORAGE FACILITY
SUPERFUND SITE - MILFORD, NEW HAMPSHIRE
FINAL (100%) DESIGN REPORT

ELM STREET AREA - VERIFICATION AREA 6

ARCADIS

FIGURE
A-13

CITY:SYRACUSE, NY DIV/GROUP: ENV/CAD DB:AMS, K.SARTORI PIC:(Opt) PM:(Reqd) TM:C.AVERILL LYR:(Opt)ON=*;OFF=*REF*
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XREFS: IMAGES: PROJECTNAME: ----
20985XAP

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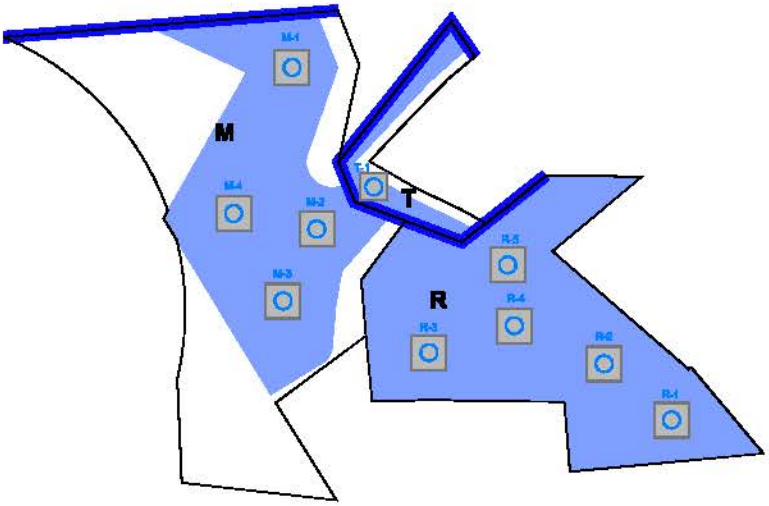
20985XAP



LEGEND:

- EXCAVATION LIMITS
- SOLDIER PILE AND LAGGING SUPPORT
- M — EXCAVATION CELL ID
- ○ PROPOSED SAMPLE LOCATION

DRAFT
FOR EPA REVIEW

0 50' 100'
GRAPHIC SCALE

NOTES:

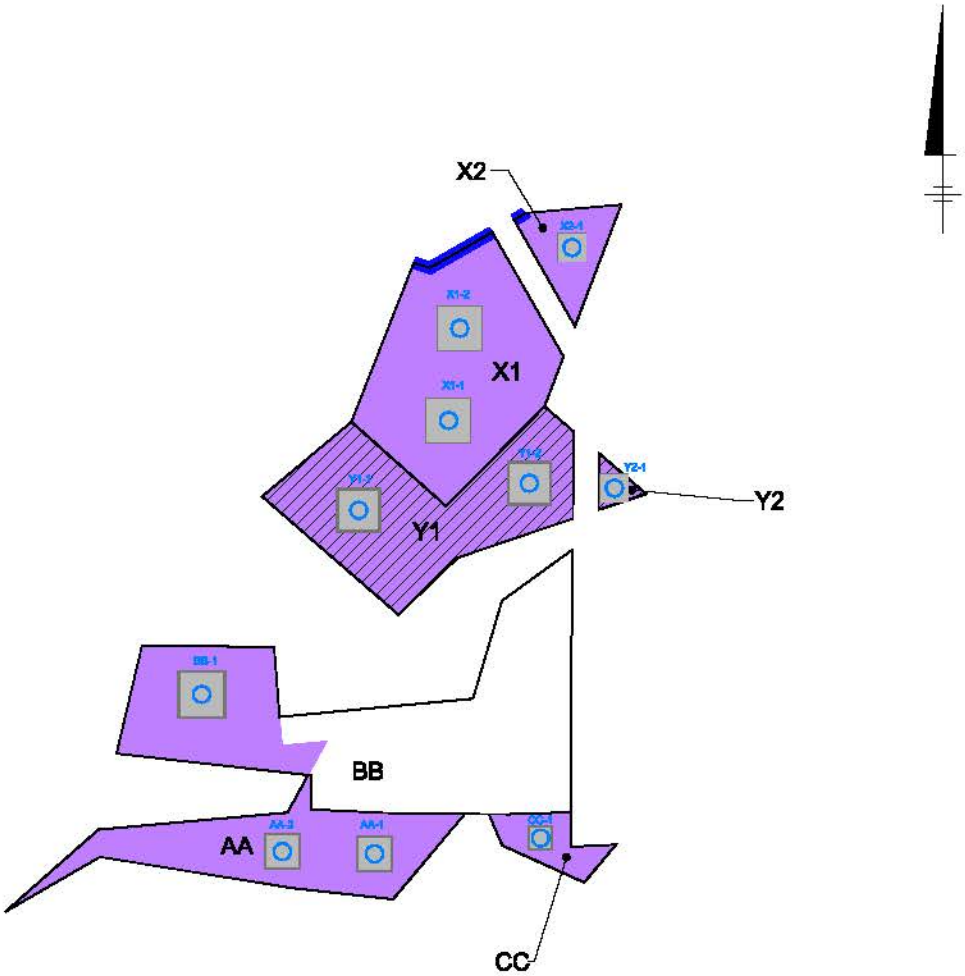
1. HORIZONTAL DATUM BASED ON NEW HAMPSHIRE STATE PLANE COORDINATE SYSTEM OF 1983.
2. MAP COMPILED FROM ACTUAL FIELD SURVEY PERFORMED BY BBL, INC. FROM JULY 16, 2003 THROUGH AUGUST 14, 2003, BY MERIDAN LAND SERVICES, INC. JANUARY 22, 2004, AND BY ARCADIS ON MAY 24, 2007.

GENERAL ELECTRIC COMPANY
FLETCHER'S PAINT WORKS AND STORAGE FACILITY
SUPERFUND SITE - MILFORD, NEW HAMPSHIRE
FINAL (100%) DESIGN REPORT

ELM STREET AREA - VERIFICATION AREA 7

ARCADIS

FIGURE
A-14



LEGEND:

———	EXCAVATION LIMITS
AA	EXCAVATION CELL ID
○	PROPOSED SAMPLE LOCATION
▨	EXCAVATION IN THIS AREA TO BE SLOPED BETWEEN HIGHER ELEVATIONS IN EXCAVATION CELLS TO SOUTH/WEST AND LOWER ELEVATIONS IN EXCAVATION CELLS TO THE NORTH/EAST

DRAFT
FOR EPA REVIEW

0 50' 100'
GRAPHIC SCALE

NOTES:

1. HORIZONTAL DATUM BASED ON NEW HAMPSHIRE STATE PLANE COORDINATE SYSTEM OF 1983.
2. MAP COMPILED FROM ACTUAL FIELD SURVEY PERFORMED BY BBL, INC. FROM JULY 16, 2003 THROUGH AUGUST 14, 2003, BY MERIDAN LAND SERVICES, INC. JANUARY 22, 2004, AND BY ARCADIS ON MAY 24, 2007.

GENERAL ELECTRIC COMPANY
FLETCHER'S PAINT WORKS AND STORAGE FACILITY
SUPERFUND SITE - MILFORD, NEW HAMPSHIRE
FINAL (100%) DESIGN REPORT

ELM STREET AREA - VERIFICATION AREA 8

ARCADIS

FIGURE
A-15

CITY:SYRACUSE, NY DIV/GROUP: ENV/CAD DB:AMS, K.SARTORI PIC:(Opt) PM:(Reqd) TM:C.AVERILL LYR:(Opt)ON=*;OFF=*REF*
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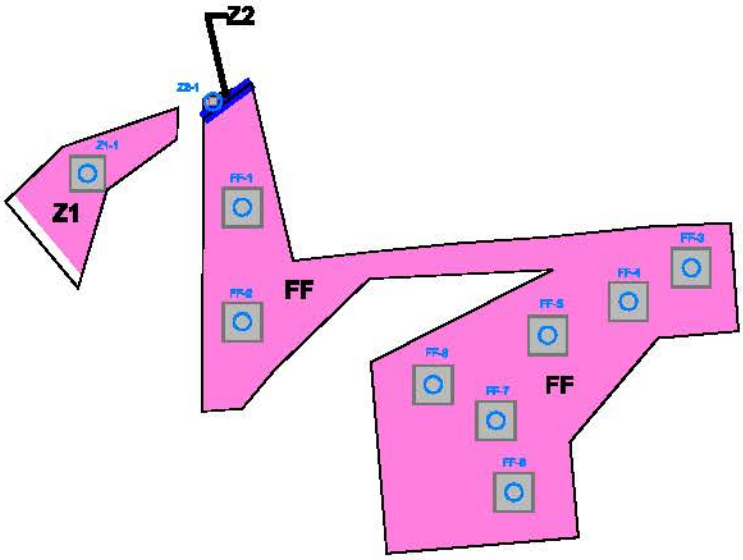

LEGEND:

———	EXCAVATION LIMITS
———	SOLDIER PILE AND LAGGING SUPPORT
FF	EXCAVATION CELL ID
○	PROPOSED SAMPLE LOCATION

DRAFT
FOR EPA REVIEW

0 50' 100'
GRAPHIC SCALE

NOTES:

1. HORIZONTAL DATUM BASED ON NEW HAMPSHIRE STATE PLANE COORDINATE SYSTEM OF 1983.
2. MAP COMPILED FROM ACTUAL FIELD SURVEY PERFORMED BY BBL, INC. FROM JULY 16, 2003 THROUGH AUGUST 14, 2003, BY MERIDAN LAND SERVICES, INC. JANUARY 22, 2004, AND BY ARCADIS ON MAY 24, 2007.

GENERAL ELECTRIC COMPANY
FLETCHER'S PAINT WORKS AND STORAGE FACILITY
SUPERFUND SITE - MILFORD, NEW HAMPSHIRE
FINAL (100%) DESIGN REPORT

ELM STREET AREA - VERIFICATION AREA 9

ARCADIS

FIGURE
A-16

CITY:SYRACUSE, NY DIV/GROUP: ENV/CAD DB:AMS, K.SARTORI PIC:(Opt) PM:(Reqd) TM:C.AVERILL LYR:(Opt)ON=*;OFF=*REF*
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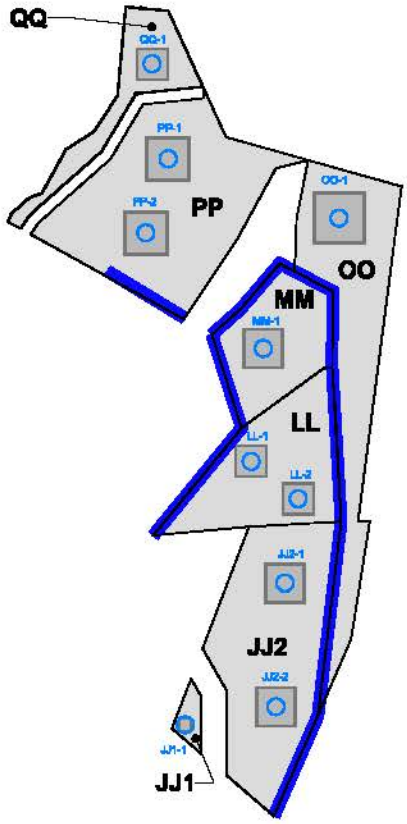

LEGEND:

———	EXCAVATION LIMITS
▬▬▬	SOLDIER PILE AND LAGGING SUPPORT
X1	EXCAVATION CELL ID
○	PROPOSED SAMPLE LOCATION

DRAFT
FOR EPA REVIEW

0 50' 100'
GRAPHIC SCALE

NOTES:

1. HORIZONTAL DATUM BASED ON NEW HAMPSHIRE STATE PLANE COORDINATE SYSTEM OF 1983.
2. MAP COMPILED FROM ACTUAL FIELD SURVEY PERFORMED BY BBL, INC. FROM JULY 16, 2003 THROUGH AUGUST 14, 2003, BY MERIDAN LAND SERVICES, INC. JANUARY 22, 2004, AND BY ARCADIS ON MAY 24, 2007.

GENERAL ELECTRIC COMPANY
FLETCHER'S PAINT WORKS AND STORAGE FACILITY
SUPERFUND SITE - MILFORD, NEW HAMPSHIRE
FINAL (100%) DESIGN REPORT

ELM STREET AREA - VERIFICATION AREA 10

ARCADIS

FIGURE
A-17

CITY:SYRACUSE, NY DIV/GROUP: ENV/CAD DB:AMS, K.SARTORI PIC:(Opt) PM:(Reqd) TM:C.AVERILL LYR:(Opt)ON=*;OFF=*REF*
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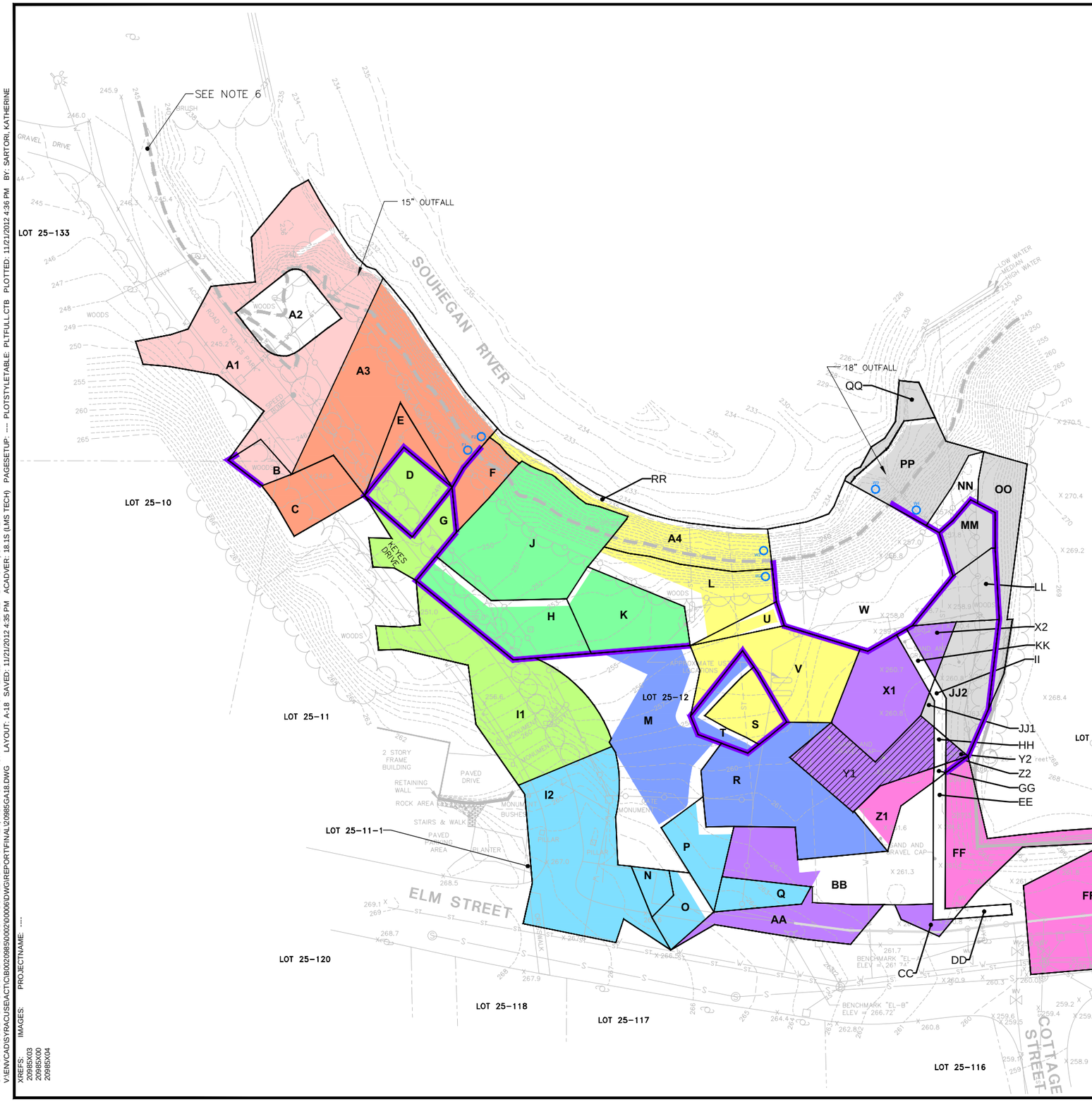

LEGEND FOR PRE-DESIGN INVESTIGATION AREA

- UTILITY POLE
- CATCH BASIN
- SANITARY MANHOLE
- STORM MANHOLE
- WATER VALVE
- WATER METER
- TELEPHONE JACK
- INDEX SURFACE ELEVATION CONTOUR
- INTERMEDIATE SURFACE ELEVATION CONTOUR
- CHAIN LINK FENCE
- FIRE HYDRANT
- DEPICTS APPROXIMATE ELEVATION OF 100-YEAR FLOOD PLAIN
- EXCAVATION LIMITS
- PROPOSED SOIL BORING
- EXCAVATION CELL ID
- SHADING INDICATES AREA IS NOT SUBJECT TO CONFIMATORY SAMPLING
- SOLDIER PILE AND LAGGING SUPPORT
- INDICATES EXCAVATION SIDEWALL NOT SUBJECT TO CONFIRMATORY SAMPLING
- EXCAVATION IN THIS AREA TO BE SLOPED BETWEEN HIGHER ELEVATIONS IN EXCAVATION CELLS TO SOUTH/WEST AND LOWER ELEVATIONS IN EXCAVATION CELLS TO THE NORTH/EAST
- VERIFICATION AREA 1
- VERIFICATION AREA 2
- VERIFICATION AREA 3
- VERIFICATION AREA 4
- VERIFICATION AREA 5
- VERIFICATION AREA 6
- VERIFICATION AREA 7
- VERIFICATION AREA 8
- VERIFICATION AREA 9
- VERIFICATION AREA 10

NOTES:

1. ELEVATIONS BASED ON NORTH AMERICAN VERTICAL DATUM OF 1988.
2. HORIZONTAL DATUM BASED ON NEW HAMPSHIRE STATE PLANE COORDINATE SYSTEM OF 1983.
3. CONTOUR INTERVAL = 1 FEET.
4. MAP COMPILED FROM ACTUAL FIELD SURVEY PERFORMED BY BBL, INC. FROM JULY 16, 2003 THROUGH AUGUST 14, 2003, BY MERIDAN LAND SERVICES, INC. JANUARY 22, 2004, AND BY ARCADIS ON MAY 24, 2007.
5. TITLE TO SHADED AREA IS UNCERTAIN AT THIS TIME. NO BOUNDARY LINE AGREEMENT (REFERRED TO IN THE CHAIN OF TITLE) HAS BEEN FOUND.
6. SHADED AREA AT THE NORTHWEST CORNER OF THE LOT DEPICTS AREA WHICH IS PART OF THE ROAD TO THE KEYES FIELD PARCEL. NO CONVEYANCE TO THE TOWN FOR THIS AREA HAS BEED FOUND.
7. THE SAND AND GRAVEL CAP, INSTALLED FOLLOWING THE BUILDING DEMOLITION BY USEPA IN JAN. 2001, WAS OBSERVED TO BE APPROXIMATELY ONE FOOT THICK AT MOST LOCATIONS ACROSS THE PROPERTY. AT OTHER LOCATIONS, CAP THICKNESS WAS ESTIMATED AS FOLLOWS: 1.5 FEET AT EB-15SE, EB-15SW, I07, L08, AND M17; TWO FEET AT EB-15, M18S, O14, O18, Q12, Q12E, Q16N, AND R12; FOUR FEET AT M16; FIVE FEET AT S13 AND S18; AND UP TO SIX FEET ALONG THE CEMETERY WALL AS MEASURED AT P18. THE SAND AND GRAVEL CAP WILL BE REMOVED DURING THE SITE PREPARATION PHASE.
8. ELM STREET SITE PROPERTY LINE SHOWN WAS ESTABLISHED FROM DEEDS OF RECORD, SURVEY, AND EXISTING MONUMENTATION. OTHER PROPERTY LINES SHOWN WERE OBTAINED FROM TOWN OF MILFORD TAX MAP 25.

0 30' 60'
GRAPHIC SCALE

DRAFT
FOR EPA REVIEW

GENERAL ELECTRIC COMPANY
FLETCHER'S PAINT WORKS AND STORAGE FACILITY
SUPERFUND SITE - MILFORD, NEW HAMPSHIRE
FINAL (100%) DESIGN REPORT

ELM STREET AREA - PROPOSED SIDEWALL CONFIRMATORY SAMPLE LOCATIONS

ARCADIS

FIGURE
A-18

CITY: SYRACUSE DIV/GROUP: ENVCAD DB: A. SCHILLING L. FORAKER, K.SARTORI PIC: P. FARR PM: C. AVERILL TM: C. AVERILL LYR: ON=*; OFF=*REF*
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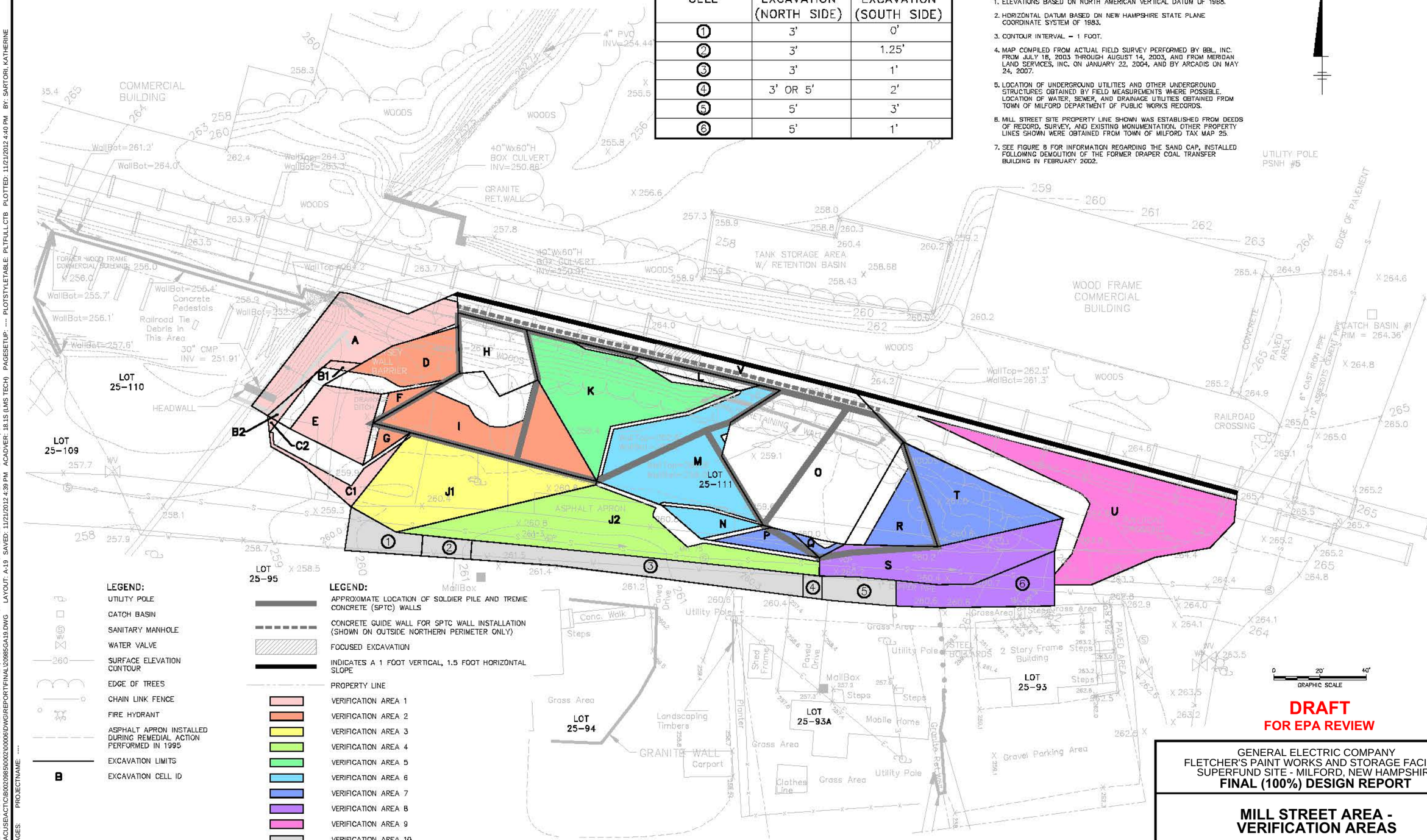
XREFS: 20985X03 20985X00 20985X04 IMAGES: PROJECTNAME: ----

EXCAVATION CELL	DEPTH OF EXCAVATION (NORTH SIDE)	DEPTH OF EXCAVATION (SOUTH SIDE)
1	3'	0'
2	3'	1.25'
3	3'	1'
4	3' OR 5'	2'
5	5'	3'
6	5'	1'

NOTES:

1. ELEVATIONS BASED ON NORTH AMERICAN VERTICAL DATUM OF 1988.
2. HORIZONTAL DATUM BASED ON NEW HAMPSHIRE STATE PLANE COORDINATE SYSTEM OF 1983.
3. CONTOUR INTERVAL – 1 FOOT.
4. MAP COMPILED FROM ACTUAL FIELD SURVEY PERFORMED BY BBL, INC. FROM JULY 18, 2003 THROUGH AUGUST 14, 2003, AND FROM MERIDAN LAND SERVICES, INC. ON JANUARY 22, 2004, AND BY ARCADIS ON MAY 24, 2007.
5. LOCATION OF UNDERGROUND UTILITIES AND OTHER UNDERGROUND STRUCTURES OBTAINED BY FIELD MEASUREMENTS WHERE POSSIBLE. LOCATION OF WATER, SEWER, AND DRAINAGE UTILITIES OBTAINED FROM TOWN OF MILFORD DEPARTMENT OF PUBLIC WORKS RECORDS.
6. MILL STREET SITE PROPERTY LINE SHOWN WAS ESTABLISHED FROM DEEDS OF RECORD, SURVEY, AND EXISTING MONUMENTATION. OTHER PROPERTY LINES SHOWN WERE OBTAINED FROM TOWN OF MILFORD TAX MAP 25.
7. SEE FIGURE 8 FOR INFORMATION REGARDING THE SAND CAP, INSTALLED FOLLOWING DEMOLITION OF THE FORMER DRAPER COAL TRANSFER BUILDING IN FEBRUARY 2002.



LEGEND:

- UTILITY POLE
- CATCH BASIN
- SANITARY MANHOLE
- WATER VALVE
- SURFACE ELEVATION CONTOUR
- EDGE OF TREES
- CHAIN LINK FENCE
- FIRE HYDRANT
- ASPHALT APRON INSTALLED DURING REMEDIAL ACTION PERFORMED IN 1995
- EXCAVATION LIMITS
- B — EXCAVATION CELL ID

LEGEND:

- APPROXIMATE LOCATION OF SOLDIER PILE AND TREMIE CONCRETE (SPTC) WALLS
- CONCRETE GUIDE WALL FOR SPTC WALL INSTALLATION (SHOWN ON OUTSIDE NORTHERN PERIMETER ONLY)
- FOCUSED EXCAVATION
- INDICATES A 1 FOOT VERTICAL, 1.5 FOOT HORIZONTAL SLOPE
- PROPERTY LINE
- VERIFICATION AREA 1
- VERIFICATION AREA 2
- VERIFICATION AREA 3
- VERIFICATION AREA 4
- VERIFICATION AREA 5
- VERIFICATION AREA 6
- VERIFICATION AREA 7
- VERIFICATION AREA 8
- VERIFICATION AREA 9
- VERIFICATION AREA 10
- AREA IS NOT SUBJECT TO CONFIRMATION SAMPLING

0 20' 40'
GRAPHIC SCALE

DRAFT
FOR EPA REVIEW

GENERAL ELECTRIC COMPANY
FLETCHER'S PAINT WORKS AND STORAGE FACILITY
SUPERFUND SITE - MILFORD, NEW HAMPSHIRE
FINAL (100%) DESIGN REPORT

MILL STREET AREA - VERIFICATION AREAS

ARCADIS

FIGURE
A-19

CITY: SYRACUSE DIV/GROUP: ENVCAD DB: A. SCHILLING L: FORAKER, K.SARTORI PIC: P. FARR PM: C. AVERILL TM: C. AVERILL LYR: ON=*; OFF=*REF*
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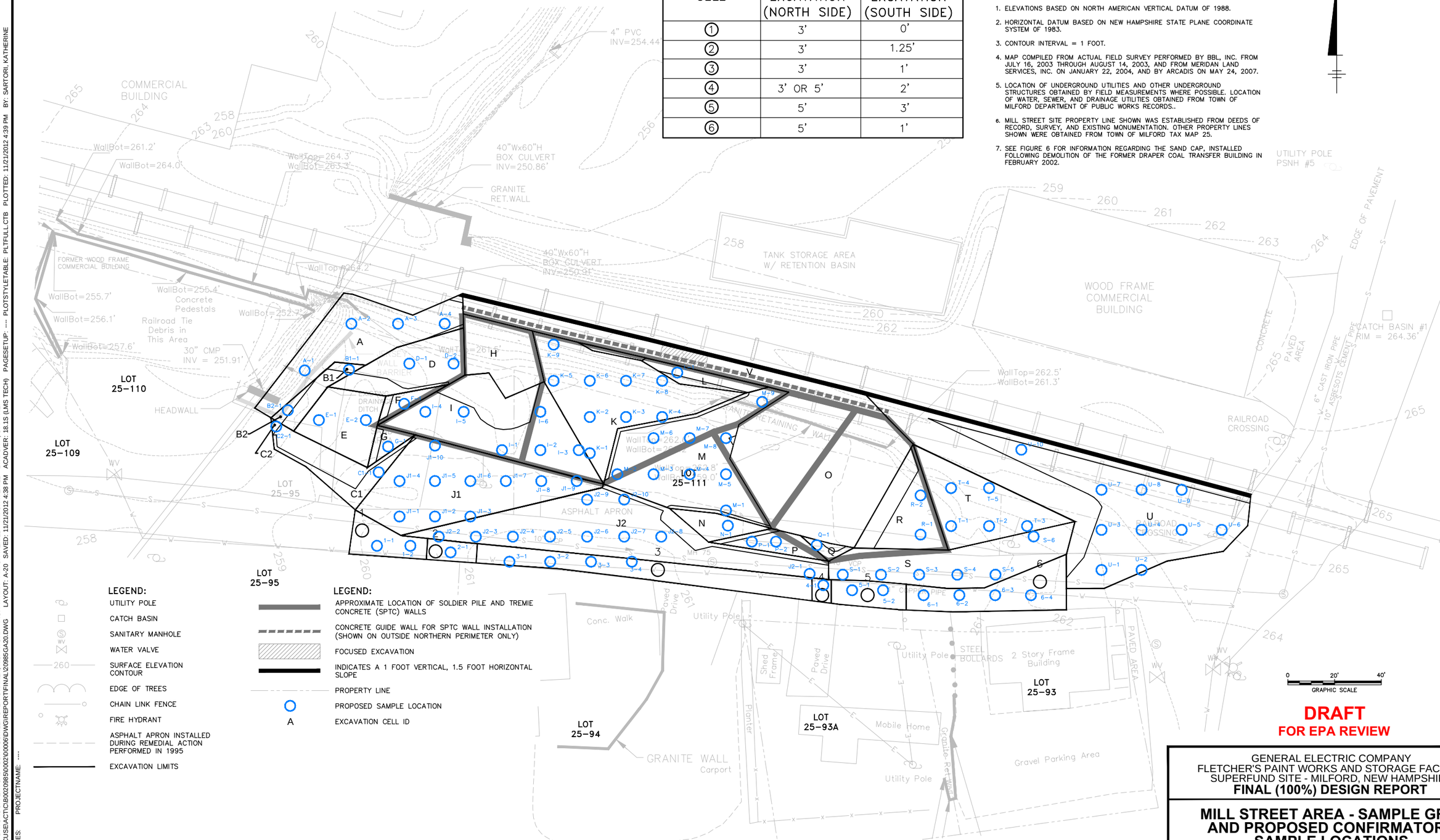
XREFS: 20985X01a 20985X00 IMAGES: PROJECTNAME: ----

EXCAVATION CELL	DEPTH OF EXCAVATION (NORTH SIDE)	DEPTH OF EXCAVATION (SOUTH SIDE)
1	3'	0'
2	3'	1.25'
3	3'	1'
4	3' OR 5'	2'
5	5'	3'
6	5'	1'

NOTES:

1. ELEVATIONS BASED ON NORTH AMERICAN VERTICAL DATUM OF 1988.
2. HORIZONTAL DATUM BASED ON NEW HAMPSHIRE STATE PLANE COORDINATE SYSTEM OF 1983.
3. CONTOUR INTERVAL = 1 FOOT.
4. MAP COMPILED FROM ACTUAL FIELD SURVEY PERFORMED BY BBL, INC. FROM JULY 16, 2003 THROUGH AUGUST 14, 2003, AND FROM MERIDAN LAND SERVICES, INC. ON JANUARY 22, 2004, AND BY ARCADIS ON MAY 24, 2007.
5. LOCATION OF UNDERGROUND UTILITIES AND OTHER UNDERGROUND STRUCTURES OBTAINED BY FIELD MEASUREMENTS WHERE POSSIBLE. LOCATION OF WATER, SEWER, AND DRAINAGE UTILITIES OBTAINED FROM TOWN OF MILFORD DEPARTMENT OF PUBLIC WORKS RECORDS..
6. MILL STREET SITE PROPERTY LINE SHOWN WAS ESTABLISHED FROM DEEDS OF RECORD, SURVEY, AND EXISTING MONUMENTATION. OTHER PROPERTY LINES SHOWN WERE OBTAINED FROM TOWN OF MILFORD TAX MAP 25.
7. SEE FIGURE 6 FOR INFORMATION REGARDING THE SAND CAP, INSTALLED FOLLOWING DEMOLITION OF THE FORMER DRAPER COAL TRANSFER BUILDING IN FEBRUARY 2002.



LEGEND:

- UTILITY POLE
- CATCH BASIN
- SANITARY MANHOLE
- WATER VALVE
- SURFACE ELEVATION CONTOUR
- EDGE OF TREES
- CHAIN LINK FENCE
- FIRE HYDRANT
- ASPHALT APRON INSTALLED DURING REMEDIAL ACTION PERFORMED IN 1995
- EXCAVATION LIMITS

LEGEND:

- APPROXIMATE LOCATION OF SOLDIER PILE AND TREMIE CONCRETE (SPTC) WALLS
- CONCRETE GUIDE WALL FOR SPTC WALL INSTALLATION (SHOWN ON OUTSIDE NORTHERN PERIMETER ONLY)
- FOCUSED EXCAVATION
- INDICATES A 1 FOOT VERTICAL, 1.5 FOOT HORIZONTAL SLOPE
- PROPERTY LINE
- PROPOSED SAMPLE LOCATION
- A — EXCAVATION CELL ID

DRAFT
FOR EPA REVIEW

GENERAL ELECTRIC COMPANY
FLETCHER'S PAINT WORKS AND STORAGE FACILITY
SUPERFUND SITE - MILFORD, NEW HAMPSHIRE
FINAL (100%) DESIGN REPORT

MILL STREET AREA - SAMPLE GRID AND PROPOSED CONFIRMATORY SAMPLE LOCATIONS

ARCADIS

FIGURE
A-20

CITY: SYRACUSE DIV/GROUP: ENVCAD DB: A. SCHILLING L: FORAKER, K.SARTORI PIC: P. FARR PM: C. AVERILL TM: C. AVERILL LYR: ON=*; OFF=*REF*
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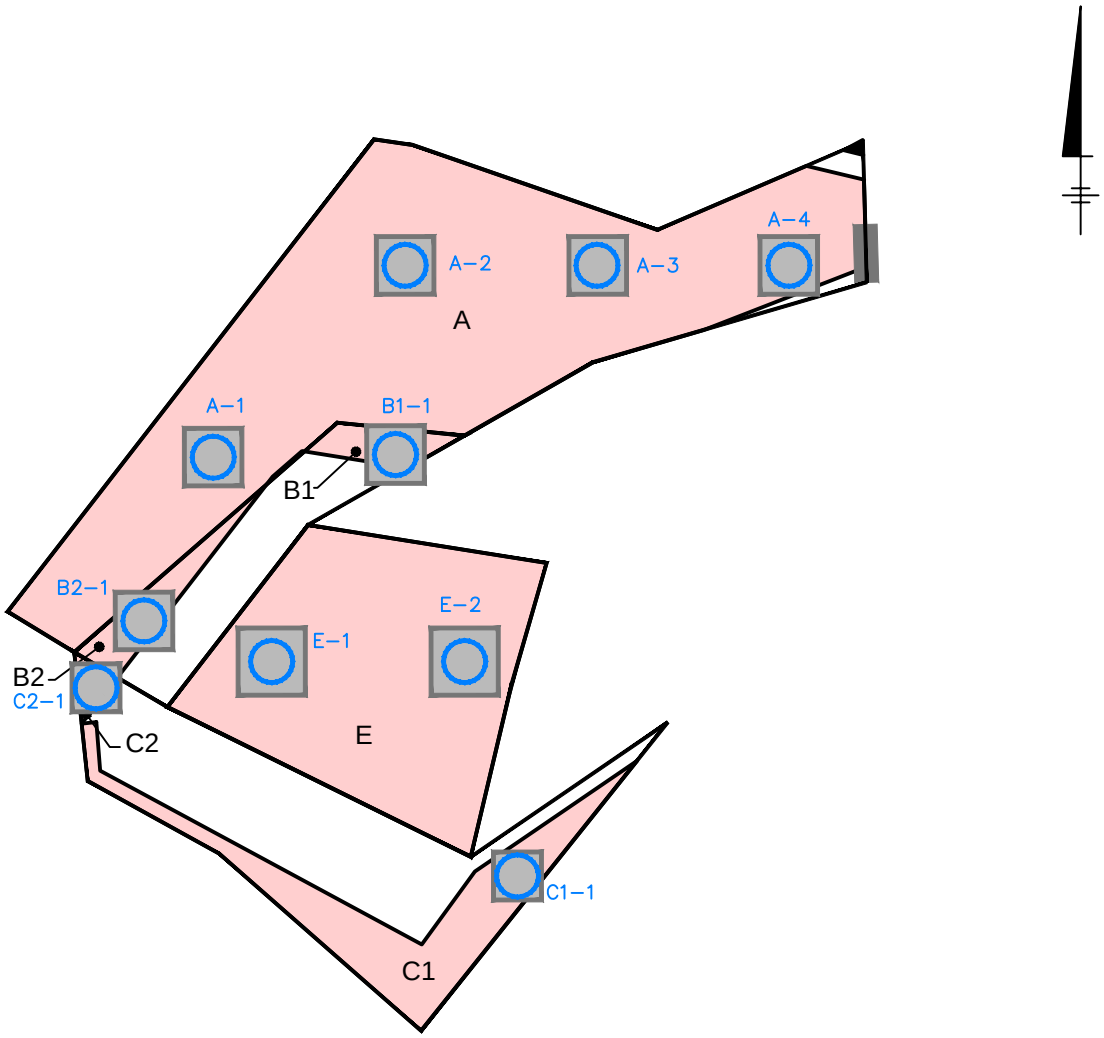

LEGEND:

EXCAVATION LIMITS

APPROXIMATE LOCATION OF SOLDIER PILE AND TREMIE CONCRETE (SPTC) WALLS

INDICATES A 1 FOOT VERTICAL, 1.5 FOOT FORIZONTAL SLOPE

A — EXCAVATION CELL ID

PROPOSED SAMPLE LOCATION

DRAFT
FOR EPA REVIEW

0 20' 40'
GRAPHIC SCALE

NOTES:

1. HORIZONTAL DATUM BASED ON NEW HAMPSHIRE STATE PLANE COORDINATE SYSTEM OF 1983.
2. MAP COMPILED FROM ACTUAL FIELD SURVEY PERFORMED BY BBL, INC. FROM JULY 16, 2003 THROUGH AUGUST 14, 2003, AND FROM MERIDAN LAND SERVICES, INC. ON JANUARY 22, 2004, AND BY ARCADIS ON MAY 24, 2007.

GENERAL ELECTRIC COMPANY
FLETCHER'S PAINT WORKS AND STORAGE FACILITY
SUPERFUND SITE - MILFORD, NEW HAMPSHIRE
FINAL (100%) DESIGN REPORT

MILL STREET AREA - VERIFICATION AREA 1

ARCADIS

FIGURE
A-21

CITY:SYRACUSE, NY DIV/GROUP: ENV/CAD DB:AMS, K.SARTORI PIC:(Opt) PM:(Reqd) TM:C.AVERILL LYR:(Opt)ON=*;OFF=*REF*
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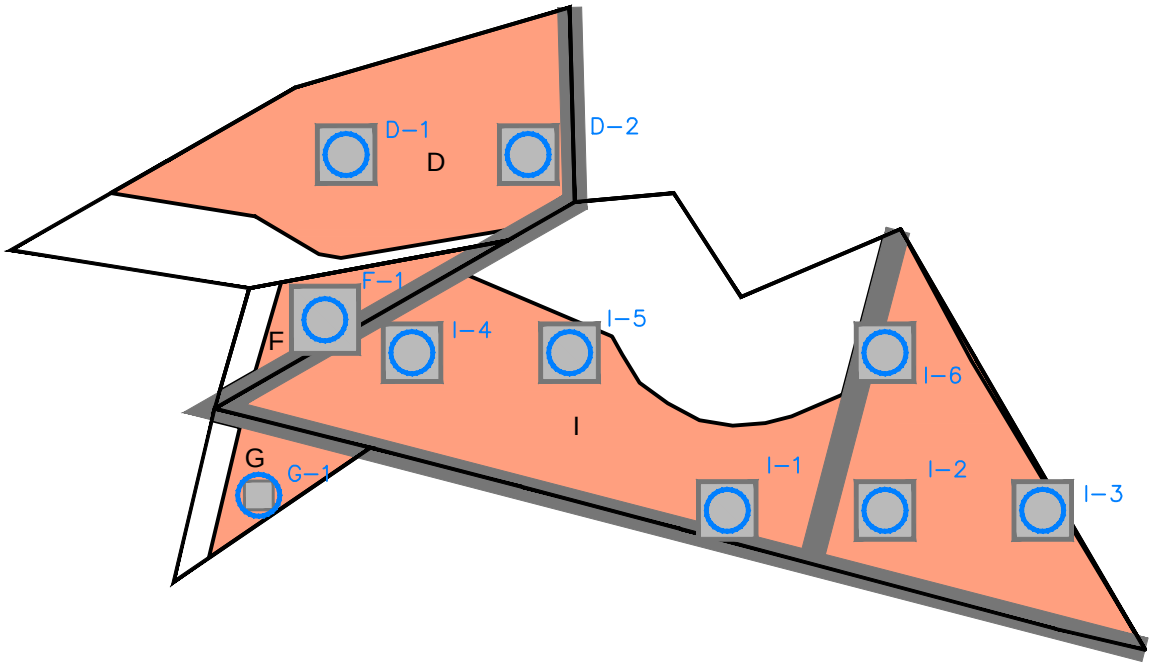
XREFS: 20985XAP IMAGES: PROJECTNAME: ----



LEGEND:

EXCAVATION LIMITS

APPROXIMATE LOCATION OF SOLDIER PILE AND TREMIE CONCRETE (SPTC) WALLS

D EXCAVATION CELL ID

PROPOSED SAMPLE LOCATION

NOTES:

1. HORIZONTAL DATUM BASED ON NEW HAMPSHIRE STATE PLANE COORDINATE SYSTEM OF 1983.
2. MAP COMPILED FROM ACTUAL FIELD SURVEY PERFORMED BY BBL, INC. FROM JULY 16, 2003 THROUGH AUGUST 14, 2003, AND FROM MERIDAN LAND SERVICES, INC. ON JANUARY 22, 2004, AND BY ARCADIS ON MAY 24, 2007.

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FOR EPA REVIEW

0 20' 40'
GRAPHIC SCALE

GENERAL ELECTRIC COMPANY
FLETCHER'S PAINT WORKS AND STORAGE FACILITY
SUPERFUND SITE - MILFORD, NEW HAMPSHIRE
FINAL (100%) DESIGN REPORT

MILL STREET AREA - VERIFICATION AREA 2

ARCADIS

FIGURE
A-22

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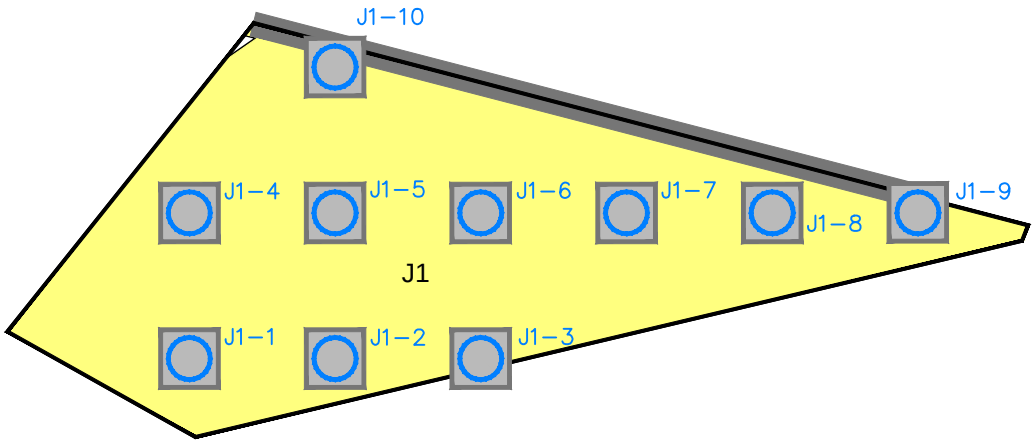

LEGEND:

EXCAVATION LIMITS

APPROXIMATE LOCATION OF SOLDIER PILE AND TREMIE CONCRETE (SPTC) WALLS

J1 EXCAVATION CELL ID

PROPOSED SAMPLE LOCATION

DRAFT
FOR EPA REVIEW

0 20' 40'
GRAPHIC SCALE

NOTES:

1. HORIZONTAL DATUM BASED ON NEW HAMPSHIRE STATE PLANE COORDINATE SYSTEM OF 1983.
2. MAP COMPILED FROM ACTUAL FIELD SURVEY PERFORMED BY BBL, INC. FROM JULY 16, 2003 THROUGH AUGUST 14, 2003, AND FROM MERIDAN LAND SERVICES, INC. ON JANUARY 22, 2004, AND BY ARCADIS ON MAY 24, 2007.

GENERAL ELECTRIC COMPANY
FLETCHER'S PAINT WORKS AND STORAGE FACILITY
SUPERFUND SITE - MILFORD, NEW HAMPSHIRE
FINAL (100%) DESIGN REPORT

MILL STREET AREA - VERIFICATION AREA 3

ARCADIS

FIGURE
A-23

CITY:SYRACUSE, NY DIV/GROUP: ENV/CAD DB:AMS, K.SARTORI PIC:(Opt) PM:(Reqd) TM:C.AVERILL LYR:(Opt)ON=*;OFF=*REF*
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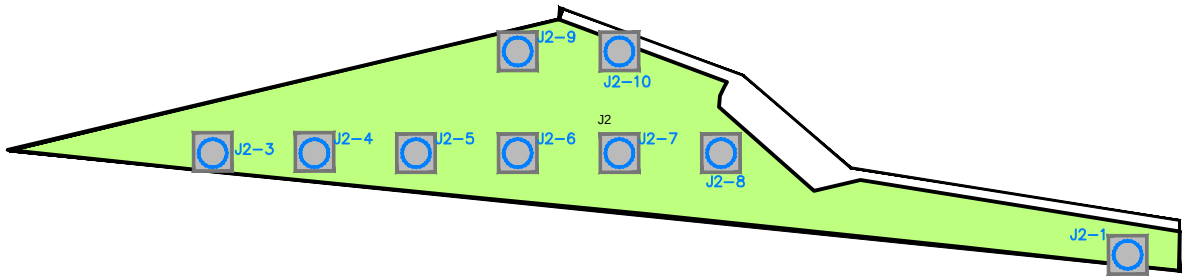

LEGEND:

EXCAVATION LIMITS

J2 EXCAVATION CELL ID

PROPOSED SAMPLE LOCATION

DRAFT
FOR EPA REVIEW

0 30' 60'
GRAPHIC SCALE

NOTES:

1. HORIZONTAL DATUM BASED ON NEW HAMPSHIRE STATE PLANE COORDINATE SYSTEM OF 1983.
2. MAP COMPILED FROM ACTUAL FIELD SURVEY PERFORMED BY BBL, INC. FROM JULY 16, 2003 THROUGH AUGUST 14, 2003, AND FROM MERIDAN LAND SERVICES, INC. ON JANUARY 22, 2004, AND BY ARCADIS ON MAY 24, 2007.

GENERAL ELECTRIC COMPANY
FLETCHER'S PAINT WORKS AND STORAGE FACILITY
SUPERFUND SITE - MILFORD, NEW HAMPSHIRE
FINAL (100%) DESIGN REPORT

MILL STREET AREA - VERIFICATION AREA 4

ARCADIS

FIGURE
A-24

CITY:SYRACUSE, NY DIV/GROUP: ENV/CAD DB:AMS, K.SARTORI PIC:(Opt) PM:(Reqd) TM:C.AVERILL LYR:(Opt)ON=*;OFF=*REF*
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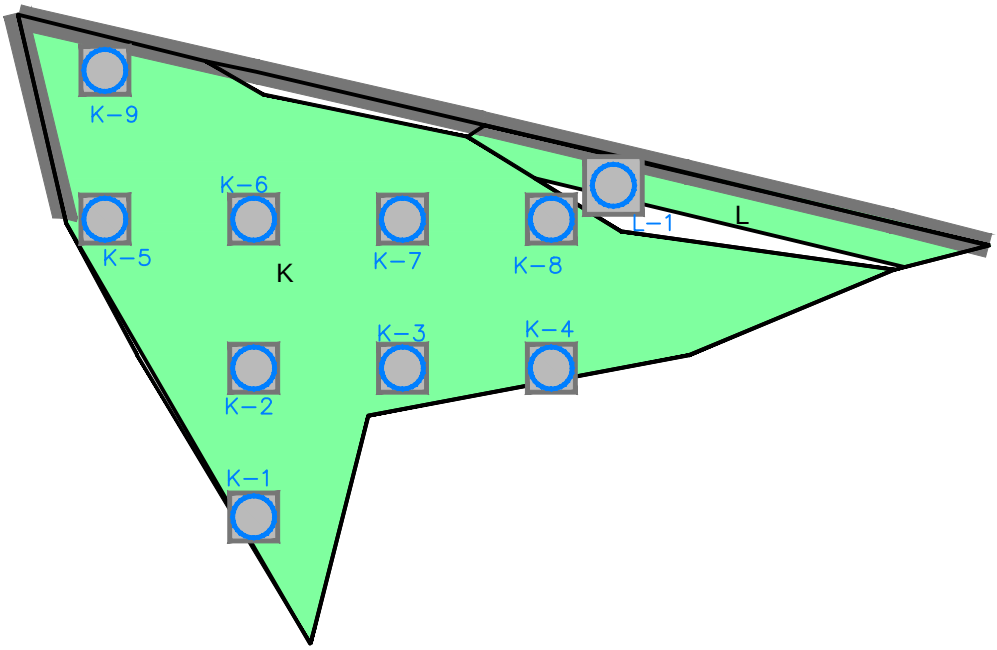

LEGEND:

EXCAVATION LIMITS

K — EXCAVATION CELL ID

APPROXIMATE LOCATION OF SOLDIER PILE AND TREMIE CONCRETE (SPTC) WALLS

PROPOSED SAMPLE LOCATION

NOTES:

1. HORIZONTAL DATUM BASED ON NEW HAMPSHIRE STATE PLANE COORDINATE SYSTEM OF 1983.
2. MAP COMPILED FROM ACTUAL FIELD SURVEY PERFORMED BY BBL, INC. FROM JULY 16, 2003 THROUGH AUGUST 14, 2003, AND FROM MERIDAN LAND SERVICES, INC. ON JANUARY 22, 2004, AND BY ARCADIS ON MAY 24, 2007.

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FOR EPA REVIEW

0 20' 40'
GRAPHIC SCALE

GENERAL ELECTRIC COMPANY
FLETCHER'S PAINT WORKS AND STORAGE FACILITY
SUPERFUND SITE - MILFORD, NEW HAMPSHIRE
FINAL (100%) DESIGN REPORT

MILL STREET AREA - VERIFICATION AREA 5

ARCADIS

FIGURE
A-25

CITY:SYRACUSE, NY DIV/GROUP: ENV/CAD DB:AMS, K.SARTORI PIC:(Opt) PM:(Reqd) TM:C.AVERILL LYR:(Opt)ON=*;OFF=*REF*
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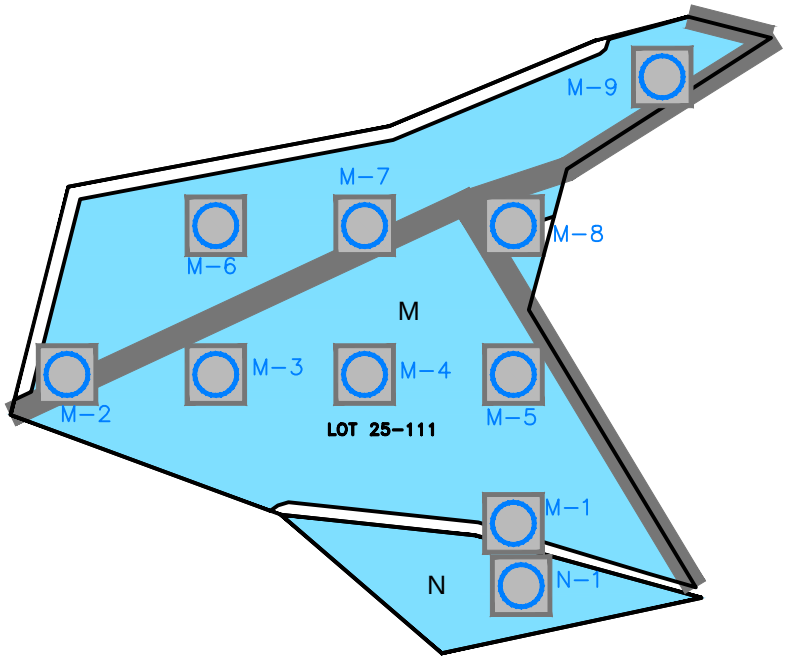

LEGEND:

EXCAVATION LIMITS

APPROXIMATE LOCATION OF SOLDIER PILE AND TREMIE CONCRETE (SPTC) WALLS

M — EXCAVATION CELL ID

PROPOSED SAMPLE LOCATION

NOTES:

1. HORIZONTAL DATUM BASED ON NEW HAMPSHIRE STATE PLANE COORDINATE SYSTEM OF 1983.
2. MAP COMPILED FROM ACTUAL FIELD SURVEY PERFORMED BY BBL, INC. FROM JULY 16, 2003 THROUGH AUGUST 14, 2003, AND FROM MERIDAN LAND SERVICES, INC. ON JANUARY 22, 2004, AND BY ARCADIS ON MAY 24, 2007.

DRAFT
FOR EPA REVIEW

0 20' 40'
GRAPHIC SCALE

GENERAL ELECTRIC COMPANY
FLETCHER'S PAINT WORKS AND STORAGE FACILITY
SUPERFUND SITE - MILFORD, NEW HAMPSHIRE
FINAL (100%) DESIGN REPORT

MILL STREET AREA - VERIFICATION AREA 6

ARCADIS

FIGURE
A-26

CITY:SYRACUSE, NY DIV/GROUP: ENV/CAD DB:AMS, K.SARTORI PIC:(Opt) PM:(Reqd) TM:C.AVERILL LYR:(Opt)ON=*;OFF=*REF*
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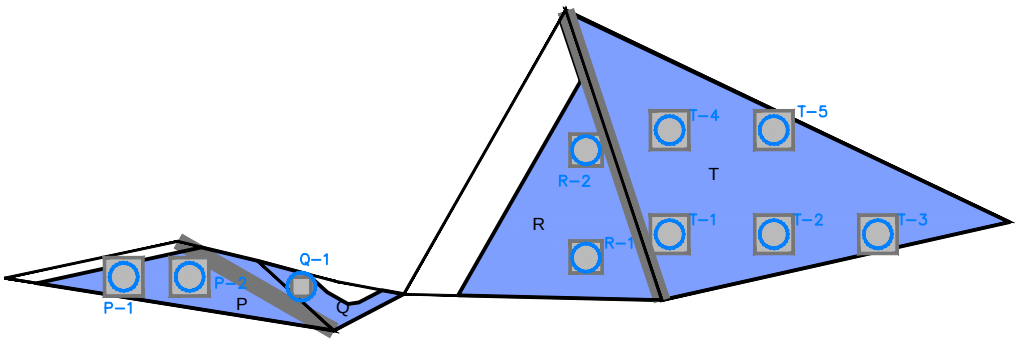

LEGEND:

EXCAVATION LIMITS

APPROXIMATE LOCATION OF SOLDIER PILE AND TREMIE CONCRETE (SPTC) WALLS

P — EXCAVATION CELL ID

PROPOSED SAMPLE LOCATION

NOTES:

1. HORIZONTAL DATUM BASED ON NEW HAMPSHIRE STATE PLANE COORDINATE SYSTEM OF 1983.
2. MAP COMPILED FROM ACTUAL FIELD SURVEY PERFORMED BY BBL, INC. FROM JULY 16, 2003 THROUGH AUGUST 14, 2003, AND FROM MERIDAN LAND SERVICES, INC. ON JANUARY 22, 2004, AND BY ARCADIS ON MAY 24, 2007.

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FOR EPA REVIEW

0 30' 60'
GRAPHIC SCALE

GENERAL ELECTRIC COMPANY
FLETCHER'S PAINT WORKS AND STORAGE FACILITY
SUPERFUND SITE - MILFORD, NEW HAMPSHIRE
FINAL (100%) DESIGN REPORT

MILL STREET AREA - VERIFICATION AREA 7

ARCADIS

FIGURE
A-27

CITY:SYRACUSE, NY DIV/GROUP: ENV/CAD DB:AMS, K.SARTORI PIC:(Opt) PM:(Reqd) TM:C.AVERILL LYR:(Opt)ON=*;OFF=*REF*
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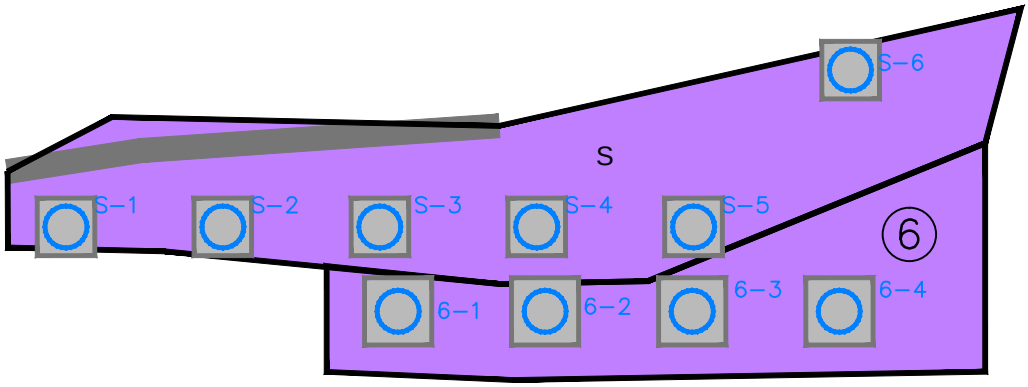

LEGEND:

- EXCAVATION LIMITS
- APPROXIMATE LOCATION OF SOLDIER PILE AND TREMIE CONCRETE (SPTC) WALLS
- S — EXCAVATION CELL ID
- PROPOSED SAMPLE LOCATION

NOTES:

1. HORIZONTAL DATUM BASED ON NEW HAMPSHIRE STATE PLANE COORDINATE SYSTEM OF 1983.
2. MAP COMPILED FROM ACTUAL FIELD SURVEY PERFORMED BY BBL, INC. FROM JULY 16, 2003 THROUGH AUGUST 14, 2003, AND FROM MERIDAN LAND SERVICES, INC. ON JANUARY 22, 2004, AND BY ARCADIS ON MAY 24, 2007.

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0 20' 40'
GRAPHIC SCALE

GENERAL ELECTRIC COMPANY
FLETCHER'S PAINT WORKS AND STORAGE FACILITY
SUPERFUND SITE - MILFORD, NEW HAMPSHIRE
FINAL (100%) DESIGN REPORT

MILL STREET AREA - VERIFICATION AREA 8

ARCADIS

FIGURE
A-28

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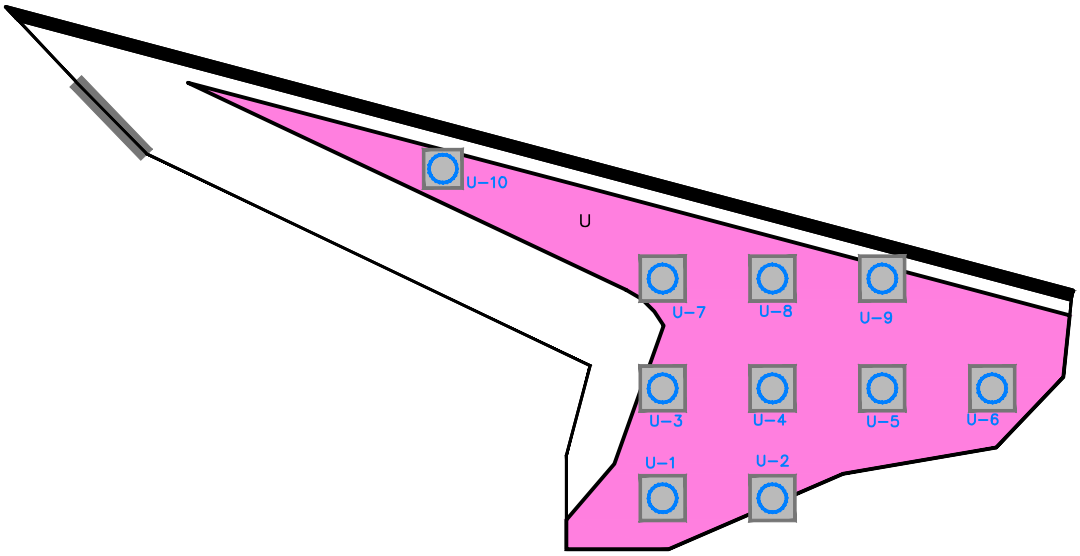

LEGEND:

- EXCAVATION LIMITS
- APPROXIMATE LOCATION OF SOLDIER PILE AND TREMIE CONCRETE (SPTC) WALLS
- INDICATES A 1 FOOT VERTICAL, 1.5 FOOT HORIZONTAL SLOPE
- U — EXCAVATION CELL ID
- PROPOSED SAMPLE LOCATION

DRAFT
FOR EPA REVIEW

0 30' 60'
GRAPHIC SCALE

NOTES:

1. HORIZONTAL DATUM BASED ON NEW HAMPSHIRE STATE PLANE COORDINATE SYSTEM OF 1983.
2. MAP COMPILED FROM ACTUAL FIELD SURVEY PERFORMED BY BBL, INC. FROM JULY 16, 2003 THROUGH AUGUST 14, 2003, AND FROM MERIDAN LAND SERVICES, INC. ON JANUARY 22, 2004, AND BY ARCADIS ON MAY 24, 2007.

GENERAL ELECTRIC COMPANY
FLETCHER'S PAINT WORKS AND STORAGE FACILITY
SUPERFUND SITE - MILFORD, NEW HAMPSHIRE
FINAL (100%) DESIGN REPORT

MILL STREET AREA - VERIFICATION AREA 9

ARCADIS

FIGURE
A-29

CITY:SYRACUSE, NY DIV/GROUP: ENV/CAD DB:AMS, K.SARTORI PIC:(Opt) PM:(Reqd) TM:C.AVERILL LYR:(Opt)ON=*;OFF=*REF*
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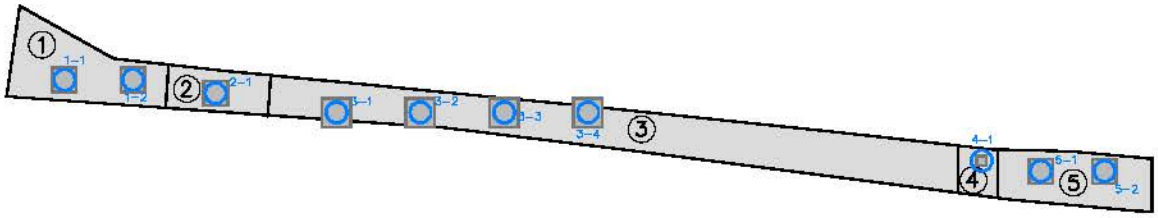

LEGEND:

EXCAVATION LIMITS

③ EXCAVATION CELL ID

○ PROPOSED SAMPLE LOCATION

DRAFT
FOR EPA REVIEW

0 40' 80'
GRAPHIC SCALE

NOTES:

1. HORIZONTAL DATUM BASED ON NEW HAMPSHIRE STATE PLANE COORDINATE SYSTEM OF 1983.
2. MAP COMPILED FROM ACTUAL FIELD SURVEY PERFORMED BY BBL, INC. FROM JULY 16, 2003 THROUGH AUGUST 14, 2003, AND FROM MERIDAN LAND SERVICES, INC. ON JANUARY 22, 2004, AND BY ARCADIS ON MAY 24, 2007.

GENERAL ELECTRIC COMPANY
FLETCHER'S PAINT WORKS AND STORAGE FACILITY
SUPERFUND SITE - MILFORD, NEW HAMPSHIRE
FINAL (100%) DESIGN REPORT

MILL STREET AREA - VERIFICATION AREA 10

ARCADIS

FIGURE
A-30

CITY:SYRACUSE, NY DIV/GROUP: ENV/CAD DB:AMS, K.SARTORI PIC:(Opt) PM:(Reqd) TM:C.AVERILL LYR:(Opt)ON=*;OFF=*REF*
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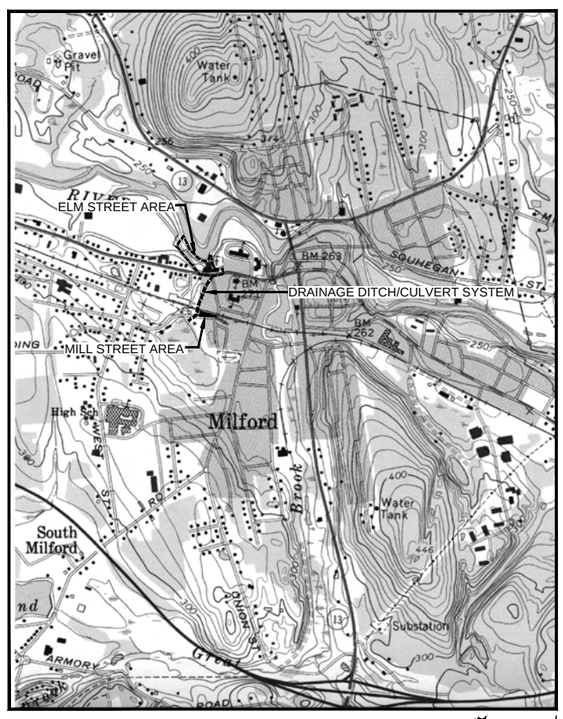
20985X01
20985XAP

Appendix B

Technical Drawings

FINAL (100%) DESIGN REPORT

REMEDIAL DESIGN FOR OPERABLE UNIT 1 OFF-SITE DISPOSAL REMEDY



REFERENCE: BASE MAP SOURCE USGS 7.5 MINUTE QUADS. SERIES MILFORD, NEW HAMPSHIRE, PHOTRESTORED 1985.

LOCATION MAP

0 2000' 4000'

GRAPHIC SCALE

AREA LOCATION

NEW HAMPSHIRE

FLETCHER'S PAINT WORKS AND STORAGE FACILITY SUPERFUND SITE MILFORD, NEW HAMPSHIRE

NOVEMBER 2012

GENERAL ELECTRIC COMPANY
ALBANY, NEW YORK

DRAFT
FOR EPA REVIEW

ARCADIS

ARCADIS U.S., INC.

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GENERAL

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G-28	SITE RESTORATION DETAILS - ELM STREET AREA
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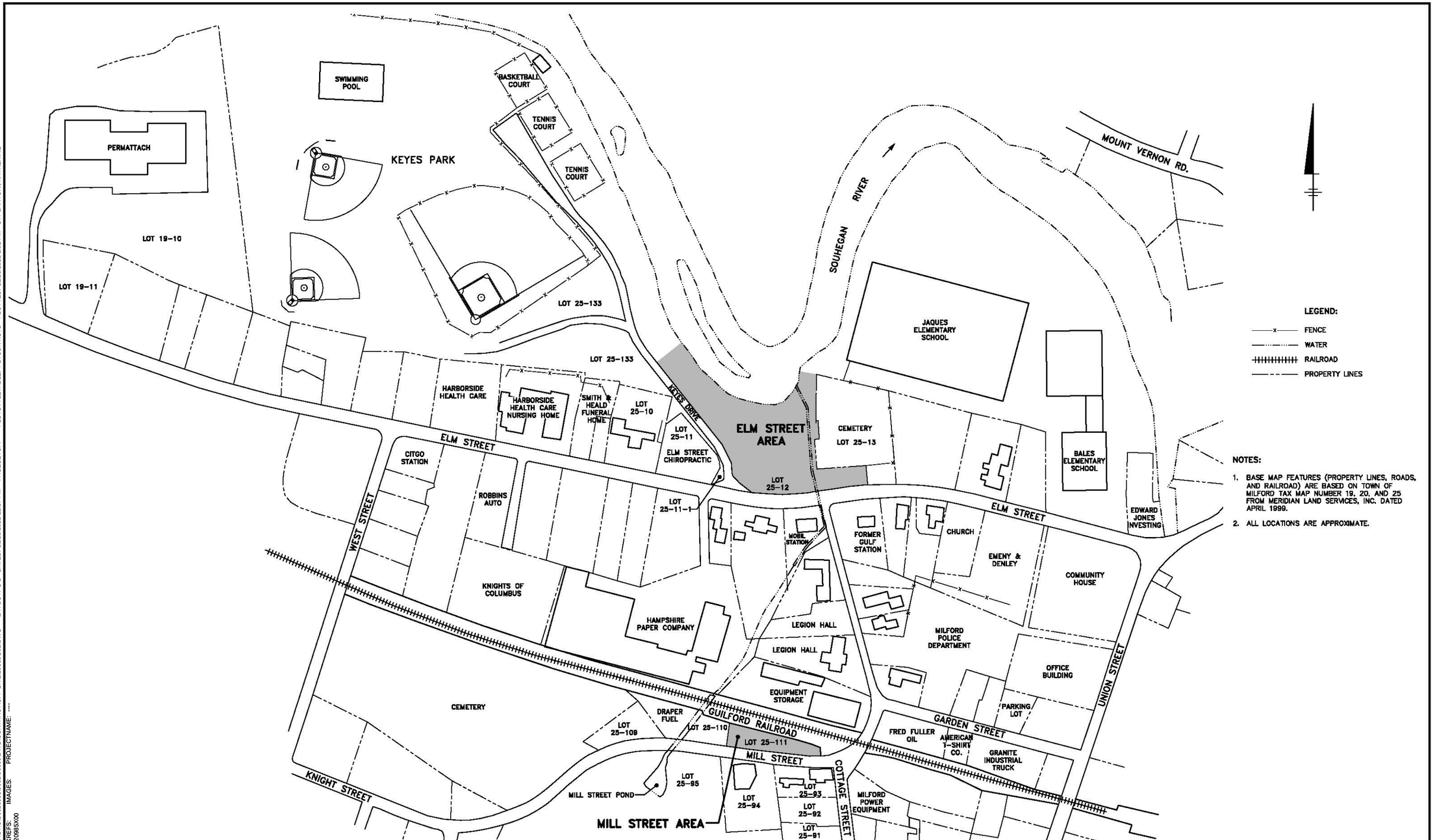

NOTES:

1. BASE MAP FEATURES (PROPERTY LINES, ROADS, AND RAILROAD) ARE BASED ON TOWN OF MILFORD TAX MAP NUMBER 19, 20, AND 25 FROM MERIDIAN LAND SERVICES, INC. DATED APRIL 1999.
2. ALL LOCATIONS ARE APPROXIMATE.

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1"=120' 120' 0 120' 240'

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No.	Date	Revisions	By	Ckd.

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Professional Engineer's Name: LOWELL W. McBURNEY
Professional Engineer's No.: 10767
State: NH | Date Signed: | Project Mgr.: CRA
Designed by: MAM | Drawn by: . | Checked by: LAF

DRAFT FOR EPA REVIEW

ARCADIS
ARCADIS U.S., INC.

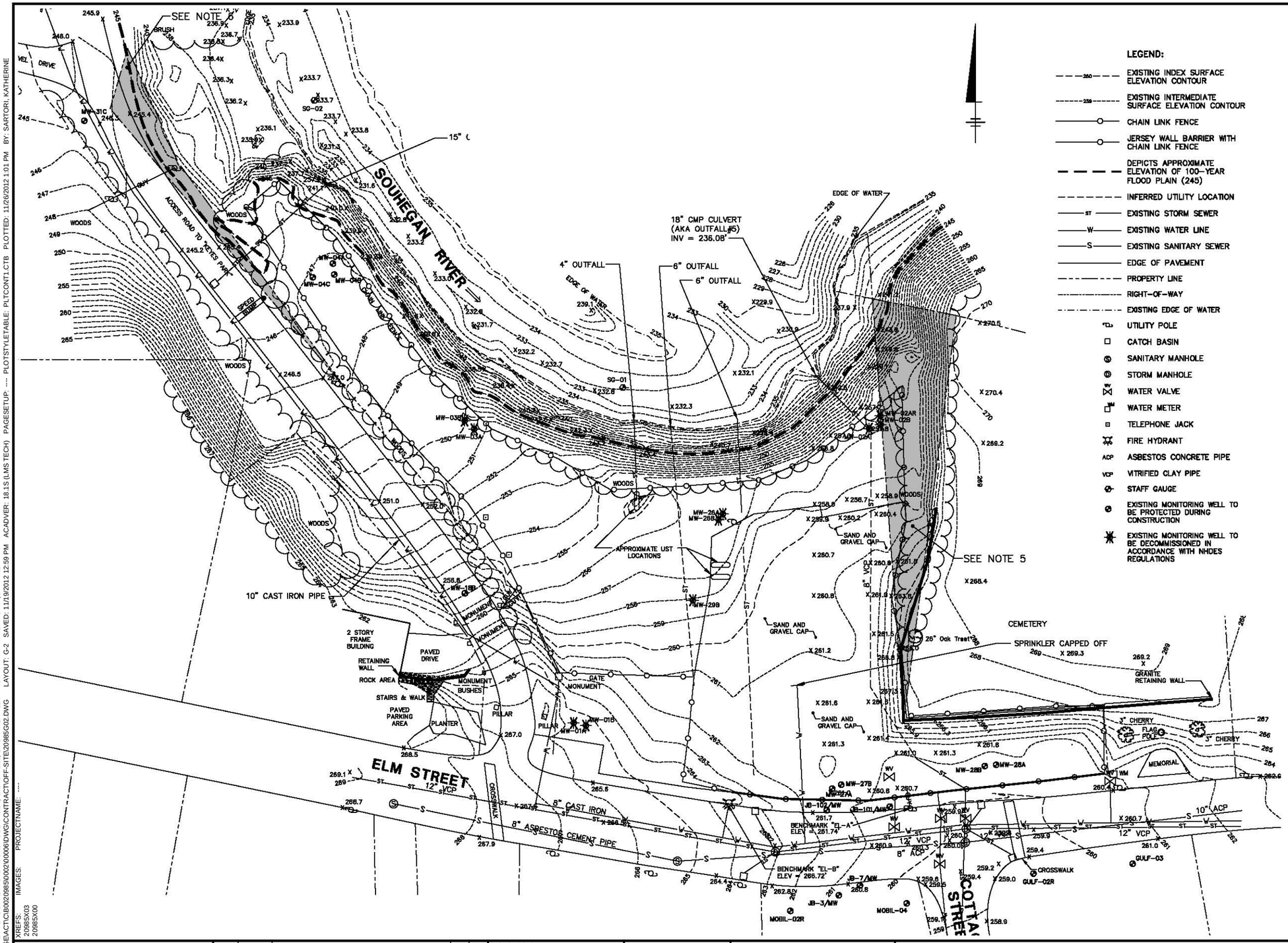
GENERAL ELECTRIC COMPANY
FLETCHER'S PAINT WORKS AND STORAGE FACILITY SUPERFUND SITE
MILFORD, NEW HAMPSHIRE
FINAL (100%) DESIGN REPORT

GENERAL SITE PLAN

ARCADIS Project No. B0020985.0002.00006
Date NOVEMBER 2012

ARCADIS OF NEW YORK
6723 TOWPATH ROAD
P.O. BOX 66
SYRACUSE, NEW YORK
TEL. 315.446.9120

G-1



LEGEND:

- EXISTING INDEX SURFACE ELEVATION CONTOUR
- EXISTING INTERMEDIATE SURFACE ELEVATION CONTOUR
- CHAIN LINK FENCE
- JERSEY WALL BARRIER WITH CHAIN LINK FENCE
- DEPICTS APPROXIMATE ELEVATION OF 100-YEAR FLOOD PLAIN (245)
- INFERRED UTILITY LOCATION
- EXISTING STORM SEWER
- EXISTING WATER LINE
- EXISTING SANITARY SEWER
- EDGE OF PAVEMENT
- PROPERTY LINE
- RIGHT-OF-WAY
- EXISTING EDGE OF WATER
- UTILITY POLE
- CATCH BASIN
- SANITARY MANHOLE
- STORM MANHOLE
- WATER VALVE
- WATER METER
- TELEPHONE JACK
- FIRE HYDRANT
- ACP ASBESTOS CONCRETE PIPE
- VCP VITRIFIED CLAY PIPE
- STAFF GAUGE
- EXISTING MONITORING WELL TO BE PROTECTED DURING CONSTRUCTION
- EXISTING MONITORING WELL TO BE DECOMMISSIONED IN ACCORDANCE WITH NHDES REGULATIONS

GENERAL NOTES:

1. TITLE TO SHADED AREA IS UNCERTAIN AT THIS TIME. NO BOUNDARY LINE AGREEMENT (REFERRED TO IN THE CHAIN OF TITLE) HAS BEEN FOUND.
2. SHADED AREA AT THE NORTHWEST CORNER OF THE LOT DEPICTS AREA THAT IS PART OF THE ROAD TO THE KEYES PARK PARCEL. NO CONVEYANCE TO THE TOWN FOR THIS AREA HAS BEEN FOUND.
3. THE SAND AND GRAVEL CAP, INSTALLED FOLLOWING THE BUILDING DEMOLITION BY USEPA IN JANUARY 2001, WAS OBSERVED TO BE A MINIMUM OF 1-FOOT-THICK AT MOST LOCATIONS ACROSS THE PROPERTY.
4. EDGE OF WATER AS SURVEYED ON OCTOBER 27 AND 28, 2009 BY ARCADIS. HISTORIC WATER LEVEL DATA IN SOUHEGAN RIVER MEASURED BY STAFF GAUGES IS PRESENTED IN TABLE 13 OF THE FINAL (100%) DESIGN REPORT.
5. ELM STREET SITE PROPERTY LINE SHOWN WAS ESTABLISHED FROM DEEDS OF RECORD, SURVEY, AND EXISTING MONUMENTATION. OTHER PROPERTY LINES SHOWN WERE OBTAINED FROM TOWN OF MILFORD TAX MAP 25.
6. DIFFERENCES NOTED BY THE CONTRACTOR BETWEEN BASE MAP INFORMATION AND ACTUAL SITE CONDITIONS THAT MAY AFFECT THE DESIGN CONFIGURATION SHALL BE SUBMITTED TO THE ENGINEER IN WRITING. MODIFICATIONS MAY BE MADE TO THE DESIGN CONFIGURATION DURING PERFORMANCE OF THE SITE WORK AT THE DISCRETION OF THE GENERAL ELECTRIC COMPANY.
7. IT IS THE CONTRACTOR'S RESPONSIBILITY TO VERIFY THE PRESENCE AND LOCATION OF ALL ABOVEGROUND AND UNDERGROUND SITE FEATURES (INCLUDING UTILITIES) IN THE VICINITY OF PROPOSED CONSTRUCTION ACTIVITIES PRIOR TO THE COMMENCEMENT OF WORK. THE LOCATION OF ALL STRUCTURES/UTILITIES SHOWN ARE APPROXIMATE BASED ON SURVEYS AND INFORMATION PROVIDED BY THE TOWN OF MILFORD. ADDITIONAL SITE FEATURES MAY BE PRESENT THAT ARE NOT SHOWN ON THE DRAWINGS. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THE PRESENCE AND LOCATION OF ALL SUCH FEATURES.
8. THE CONTRACTOR SHALL PLACE AND MAINTAIN EQUIPMENT AND MATERIALS IN A NEAT AND WORKMANLIKE MANNER.
9. THE CONTRACTOR SHALL FURNISH AND PLACE PROPER GUARDS FOR PREVENTION OF ACCIDENTS, PROVIDE ALL TRENCH SHORING, SCAFFOLDING, SHIELDING, DUST/FUME PROTECTION, MECHANICAL/ELECTRICAL PROTECTION, SPECIAL GROUNDING, SAFETY RAILINGS, BARRIERS, OR OTHER SAFETY FEATURES REQUIRED. THE CONTRACTOR SHALL PROVIDE AND MAINTAIN SUFFICIENT LIGHT DURING NIGHT HOURS TO SECURE SUCH PROTECTION.
10. IT IS THE CONTRACTOR'S RESPONSIBILITY TO COORDINATE ALL NECESSARY TRAFFIC CONTROLS AND OBTAIN ALL NECESSARY LOCAL PERMITS (OR, FOR SITE WORK, IDENTIFY AND COMPLY WITH ALL SUBSTANTIVE REQUIREMENTS) THAT MAY BE REQUIRED TO PERFORM THE WORK.
11. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR INITIATING, MAINTAINING, AND SUPERVISING ALL SAFETY PRECAUTIONS AND PROGRAMS IN CONNECTION WITH THIS CONTRACT. THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS FOR THE SAFETY OF, AND SHALL PROVIDE THE NECESSARY PRECAUTION TO PREVENT DAMAGE, INJURY, OR LOSS TO, ALL EMPLOYEES ON THE WORK AND ALL OTHER PERSONS WHO MAY BE AFFECTED THEREBY.
12. ALL SURFACES DAMAGED OR DESTROYED AS A RESULT OF WORK PERFORMED SHALL BE RESTORED TO THEIR PRECONSTRUCTION CONDITION OR FINAL RESTORATION DESIGN IN A TIMELY MANNER AND PRIOR TO CONTRACTOR DEMOBILIZATION.
13. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO ESTABLISH AND MAINTAIN CONSTRUCTION SURVEY CONTROL DURING THE PERFORMANCE OF WORK.
14. CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS WHEN WORKING NEAR THE EXISTING GRANITE RETAINING WALL ALONG CEMETERY TO PREVENT ANY DISTURBANCE OR DAMAGE TO THE WALL.

30' 0 30' 60'
1"=30'

THIS BAR REPRESENTS ONE INCH ON THE ORIGINAL DRAWING: USE TO VERIFY FIGURE REPRODUCTION SCALE

No.	Date	Revisions	By	Ckd

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Professional Engineer's Name: LOWELL W. McBURNEY
Professional Engineer's No.: 10767
State: NH | Date Signed: | Project Mgr.: CRA
Designed by: MAM | Drawn by: | Checked by:

DRAFT FOR EPA REVIEW

ARCADIS
ARCADIS U.S., INC.

GENERAL ELECTRIC COMPANY
FLETCHER'S PAINT WORKS AND STORAGE FACILITY SUPERFUND SITE
MILFORD, NEW HAMPSHIRE
FINAL (100%) DESIGN REPORT

EXISTING CONDITIONS - ELM STREET AREA

ARCADIS Project No. B0020985.0002.00006
Date NOVEMBER 2012

ARCADIS OF NEW YORK
6723 TOWPATH ROAD
P.O. BOX 66
SYRACUSE, NEW YORK
TEL. 315.446.9120

G-2

CITY: SYRACUSE-NY DIV/GROUP: ENVCAD DB: L.POSENAUER, G.STOWELL, L.FORAKER LD: PIC: PM: TM: LYR:ON=*;OFF=*REF*
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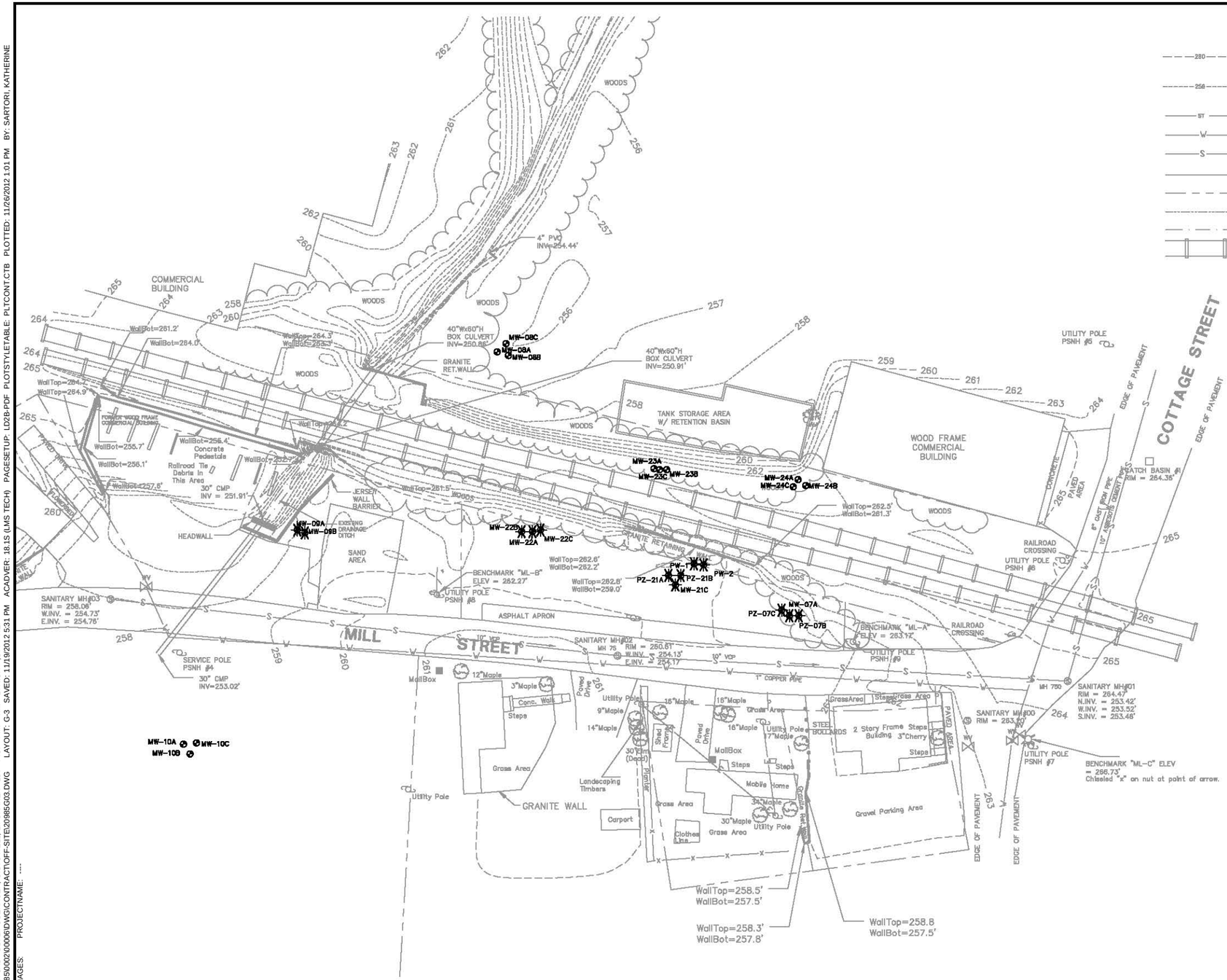

LEGEND:

- EXISTING INDEX SURFACE ELEVATION CONTOUR
- EXISTING INTERMEDIATE SURFACE ELEVATION CONTOUR
- EXISTING STORM SEWER
- EXISTING WATER LINE
- EXISTING SANITARY SEWER
- EDGE OF PAVEMENT
- PROPERTY LINE
- RIGHT-OF-WAY
- EDGE OF DITCH
- EXISTING RAILROAD TRACKS
- UTILITY POLE
- CATCH BASIN
- SANITARY MANHOLE
- STORM MANHOLE
- WATER VALVE
- WATER METER
- TELEPHONE JACK
- FIRE HYDRANT
- ACP ASBESTOS CONCRETE PIPE
- VCP VITRIFIED CLAY PIPE
- EXISTING MONITORING WELL TO BE PROTECTED DURING CONSTRUCTION
- EXISTING MONITORING WELL/PUMPING WELL/TEMPORARY PIEZOMETER TO BE DECOMMISSIONED IN ACCORDANCE WITH NHDES REGULATIONS

GENERAL NOTES:

1. MILL STREET SITE PROPERTY LINE SHOWN WAS ESTABLISHED FROM DEEDS OF RECORD, SURVEY, AND EXISTING MONUMENTATION. OTHER PROPERTY LINES SHOWN WERE OBTAINED FROM TOWN OF MILFORD TAX MAP 25.
2. DIFFERENCES NOTED BY THE CONTRACTOR BETWEEN BASE MAP INFORMATION AND ACTUAL SITE CONDITIONS THAT MAY AFFECT THE DESIGN CONFIGURATION SHALL BE SUBMITTED TO THE ENGINEER IN WRITING. MODIFICATIONS MAY BE MADE TO THE DESIGN CONFIGURATION DURING PERFORMANCE OF THE SITE WORK AT THE DISCRETION OF THE GENERAL ELECTRIC COMPANY.
3. IT IS THE CONTRACTOR'S RESPONSIBILITY TO VERIFY THE PRESENCE AND LOCATION OF ALL ABOVEGROUND AND UNDERGROUND SITE FEATURES (INCLUDING UTILITIES) IN THE VICINITY OF PROPOSED CONSTRUCTION ACTIVITIES PRIOR TO THE COMMENCEMENT OF WORK. THE LOCATION OF ALL STRUCTURES/UTILITIES SHOWN ARE APPROXIMATE BASED ON SURVEYS AND INFORMATION PROVIDED BY THE TOWN OF MILFORD. ADDITIONAL SITE FEATURES MAY BE PRESENT THAT ARE NOT SHOWN ON THE DRAWINGS. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THE PRESENCE AND LOCATION OF ALL SUCH FEATURES.
4. THE CONTRACTOR SHALL PLACE AND MAINTAIN EQUIPMENT AND MATERIALS IN A NEAT AND WORKMANLIKE MANNER.
5. THE CONTRACTOR SHALL FURNISH AND PLACE PROPER GUARDS FOR PREVENTION OF ACCIDENTS, PROVIDE ALL TRENCH SHORING, SCAFFOLDING, SHIELDING, DUST/FUME PROTECTION, MECHANICAL/ELECTRICAL PROTECTION, SPECIAL GROUNDING, SAFETY RAILINGS, BARRIERS, OR OTHER SAFETY FEATURES REQUIRED. THE CONTRACTOR SHALL PROVIDE AND MAINTAIN SUFFICIENT LIGHT DURING NIGHT HOURS TO SECURE SUCH PROTECTION.
6. IT IS THE CONTRACTOR'S RESPONSIBILITY TO COORDINATE ALL NECESSARY TRAFFIC CONTROLS AND OBTAIN ALL NECESSARY LOCAL PERMITS (OR, FOR SITE WORK, IDENTIFY AND COMPLY WITH ALL SUBSTANTIVE REQUIREMENTS) THAT MAY BE REQUIRED TO PERFORM THE WORK.
7. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR INITIATING, MAINTAINING, AND SUPERVISING ALL SAFETY PRECAUTIONS AND PROGRAMS IN CONNECTION WITH THIS CONTRACT. THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS FOR THE SAFETY OF, AND SHALL PROVIDE THE NECESSARY PRECAUTION TO PREVENT DAMAGE, INJURY, OR LOSS TO, ALL EMPLOYEES ON THE WORK AND ALL OTHER PERSONS WHO MAY BE AFFECTED THEREBY.
8. ALL SURFACES DAMAGED OR DESTROYED AS A RESULT OF WORK PERFORMED SHALL BE RESTORED TO THEIR PRECONSTRUCTION CONDITION OR FINAL RESTORATION DESIGN IN A TIMELY MANNER AND PRIOR TO CONTRACTOR DEMOBILIZATION.
9. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO ESTABLISH AND MAINTAIN CONSTRUCTION SURVEY CONTROL DURING THE PERFORMANCE OF WORK.

CITY: SYRACUSE-NY DIV/GROUP: ENVCAD DB: L.POSENAUER, G.STOWELL, L.FORAKER LD: PIC: PM: TM: LYR:ON=*;OFF=*REF*
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XREFS: 20985X01 20985X00 IMAGES: PROJECTNAME: ----

30' 0 30' 60'
1"=30'

THIS BAR REPRESENTS ONE INCH ON THE ORIGINAL DRAWING:

USE TO VERIFY FIGURE REPRODUCTION SCALE

No.	Date	Revisions	By	Ckd

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Professional Engineer's Name: LOWELL W. McBURNEY
Professional Engineer's No.: 10767
State: NH | Date Signed: | Project Mgr.: CRA
Designed by: MAM | Drawn by: . | Checked by: LAF

DRAFT FOR EPA REVIEW

ARCADIS
ARCADIS U.S., INC.

GENERAL ELECTRIC COMPANY
FLETCHER'S PAINT WORKS AND STORAGE FACILITY SUPERFUND SITE
MILFORD, NEW HAMPSHIRE
FINAL (100%) DESIGN REPORT

EXISTING CONDITIONS - MILL STREET AREA

ARCADIS Project No. B0020985.0002.00006
Date NOVEMBER 2012

ARCADIS OF NEW YORK
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P.O. BOX 66
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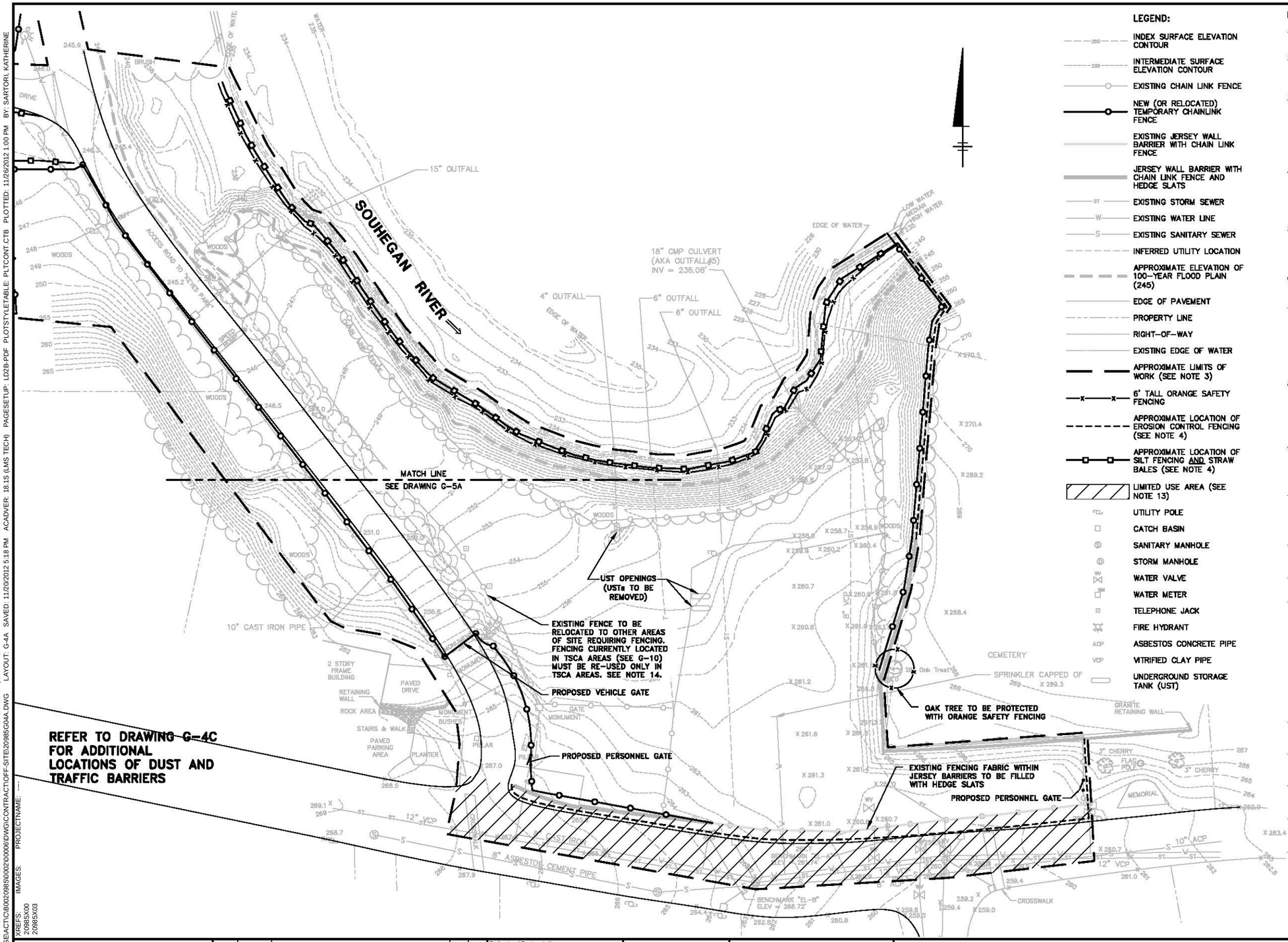
G-3



LEGEND:

- INDEX SURFACE ELEVATION CONTOUR
- INTERMEDIATE SURFACE ELEVATION CONTOUR
- EXISTING CHAIN LINK FENCE
- NEW (OR RELOCATED) TEMPORARY CHAINLINK FENCE
- EXISTING JERSEY WALL BARRIER WITH CHAIN LINK FENCE
- JERSEY WALL BARRIER WITH CHAIN LINK FENCE AND HEDGE SLATS
- EXISTING STORM SEWER
- EXISTING WATER LINE
- EXISTING SANITARY SEWER
- INFERRED UTILITY LOCATION
- APPROXIMATE ELEVATION OF 100-YEAR FLOOD PLAIN (245)
- EDGE OF PAVEMENT
- PROPERTY LINE
- RIGHT-OF-WAY
- EXISTING EDGE OF WATER
- APPROXIMATE LIMITS OF WORK (SEE NOTE 3)
- 6' TALL ORANGE SAFETY FENCING
- APPROXIMATE LOCATION OF EROSION CONTROL FENCING (SEE NOTE 4)
- APPROXIMATE LOCATION OF SILT FENCING AND STRAW BALES (SEE NOTE 4)
- LIMITED USE AREA (SEE NOTE 13)
- UTILITY POLE
- CATCH BASIN
- SANITARY MANHOLE
- STORM MANHOLE
- WATER VALVE
- WATER METER
- TELEPHONE JACK
- FIRE HYDRANT
- ASBESTOS CONCRETE PIPE
- VITRIFIED CLAY PIPE
- UNDERGROUND STORAGE TANK (UST)

NOTES:

1. REFER TO DRAWINGS G-1, G-2, AND G-32 FOR GENERAL NOTES PERTAINING TO BASE MAPPING, CONTRACT REQUIREMENTS, AND SITE INFORMATION.
2. ALL WORK SHALL BE PERFORMED WITHIN THE PROJECT LIMITS. WORK DEEMED NECESSARY TO BE PERFORMED OUTSIDE THE LIMITS OF WORK SHALL BE APPROVED BY THE OWNER AND THE GENERAL ELECTRIC COMPANY PRIOR TO THE COMMENCEMENT OF SUCH WORK.
3. IT IS THE CONTRACTOR'S RESPONSIBILITY TO ESTABLISH, MAINTAIN, AND PROTECT THE PROJECT LIMITS INCLUDING SUPPORT ZONES, EXCLUSION ZONES, AND CONTAMINATION REDUCTION ZONES FOR EACH AND EVERY PHASE OF WORK AS PART OF THIS CONTRACT. A SECURE SITE IS TO BE MAINTAINED AT ALL TIMES. CONTRACTOR SHALL INSTALL TEMPORARY FENCING AND WARNING SIGNS ALONG THE APPROXIMATE LIMITS OF WORK (OR USE EXISTING, AS APPROPRIATE) AS NECESSARY TO PREVENT PEDESTRIAN OR OTHER UN-AUTHORIZED PERSONNEL FROM ACCESSING THE WORK SITE.
4. SILT FENCING AND OTHER SEDIMENT AND EROSION CONTROL MEASURES SHALL BE ESTABLISHED AND MAINTAINED BY THE CONTRACTOR AS APPROPRIATE TO CONTROL SEDIMENT/ PARTICULATE OFF-SITE MIGRATION. THE FINAL LOCATIONS OF THESE CONTROLS WILL BE DETERMINED AND/OR MODIFIED IN THE FIELD BASED ON SITE-SPECIFIC CONSIDERATIONS RELATED TO DRAINAGE, TOPOGRAPHY, EXCAVATION SEQUENCING, ETC.
5. THE AREAS LOCATED WITHIN THE APPROXIMATE LIMITS OF WORK ARE AVAILABLE FOR USE BY THE CONTRACTOR DURING REMEDIAL ACTIVITIES. HOWEVER, CONTRACTOR SHALL ALSO NOTE AND ABIDE BY THE TEMPORARY RESIDENTIAL ACCESS ROADWAY PLAN FOR 51 ELM STREET (SEE DRAWING G-4C)
6. THE CONTRACTOR SHALL REMOVE AND PROPERLY DISPOSE OF ALL ABOVEGROUND DEBRIS, BRUSH, LOGS, TREES, STUMPS, REFUSE, AND RUBBISH FROM WITHIN THE PROJECT LIMITS, AS REQUIRED TO PERFORM THE WORK.
7. THE CONTRACTOR SHALL RESTORE TO PRE-REMEDIAL CONDITIONS ALL SUPPORT AREAS THAT ARE IMPACTED BY REMEDIAL ACTIVITIES, INCLUDING BUT NOT LIMITED TO, EQUIPMENT AND MATERIALS STORAGE AREAS, MATERIAL LOADING AND STAGING AREAS, PARKING AREAS, AND LOCATIONS OF OFFICE TRAILERS; EXCEPT AS NOTED OTHERWISE IN THE CONTRACT DOCUMENTS. MATERIALS USED TO CONSTRUCT SUPPORT AREAS AND/OR CLEAN EQUIPMENT/MATERIALS STAGING AREAS MAY BE REUSED AS BACKFILL OR SITE RESTORATION MATERIALS, AS APPROPRIATE.
8. THE DRAWINGS MAY NOT INDICATE ALL EXISTING SURFACE FEATURES SUBJECT TO REPLACEMENT AS PART OF SITE RESTORATION ACTIVITIES. THIS WILL NOT RELIEVE THE CONTRACTOR FROM REPLACING ANY AND ALL SUCH ITEMS IDENTIFIED DURING THE PERFORMANCE OF THE WORK. ANY AND ALL SUCH ITEMS IDENTIFIED ON THE DRAWINGS AND/OR DURING THE PERFORMANCE OF THE WORK SHALL BE REPLACED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE GENERAL ELECTRIC COMPANY.
9. THE CONTRACTOR SHALL MAKE EVERY ATTEMPT TO MINIMIZE DISTURBANCE/DAMAGE TO THE EXISTING CEMETERY AND KOREAN WAR MEMORIAL LOCATED ADJACENT TO THE SITE. DAMAGE TO THESE STRUCTURES SHALL BE REPAIRED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE GENERAL ELECTRIC COMPANY.
10. ALL OPERATIONAL INLET STRUCTURES, WITHIN OR DOWNGRADIENT OF THE LIMITS OF WORK (CATCH BASINS, MANHOLES, ETC.) SHALL BE PROTECTED DURING THE CONSTRUCTION ACTIVITIES. ADEQUATE MEASURES SHALL BE INSTALLED TO PREVENT SILT AND SEDIMENT FROM ENTERING THE INLET STRUCTURES.
11. THE CONTRACTOR SHALL OBSERVE ALL EXISTING ROAD/BRIDGE WEIGHT LIMITS/RESTRICTIONS WHEN HAULING MATERIALS AND/OR TRANSPORTING HEAVY EQUIPMENT TO AND FROM THE SITE.
12. THE CONTRACTOR SHALL CONTROL DUST, VAPORS, AND ODORS THAT RESULT FROM THE REMEDIAL ACTIVITIES TO MEET ESTABLISHED AMBIENT STANDARDS.
13. LAND LOCATED WITHIN ELM STREET RIGHT-OF-WAY SHALL BE USED ONLY AS NECESSARY TO CONDUCT LIMITED EXCAVATION, AS REQUIRED. WORK IN THIS AREA SHALL BE COORDINATED BY THE CONTRACTOR SO AS TO MINIMIZE TRAFFIC INTERRUPTIONS ALONG ELM STREET, AS WELL AS TO MAINTAIN A SECURE WORK SITE. CONTRACTOR SHALL ALSO BE RESPONSIBLE FOR COORDINATING COMPLETE OR PARTIAL (E.G., ONE LANE) TRAFFIC CLOSURE WITH LOCAL MUNICIPAL AUTHORITIES PRIOR TO CONDUCTING WORK IN THIS AREA. CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING APPROPRIATE WARNING SIGNS AND FLAG PERSONS TO CONTROL TRAFFIC DURING PERIODS IN WHICH ACTIVE WORK ACTIVITIES ARE BEING CONDUCTED ON OR NEAR THE ELM STREET RIGHT-OF-WAY. THE CONTRACTOR WILL BE REQUIRED TO COORDINATE ALL WORK WITHIN THE ELM STREET RIGHT-OF-WAY WITH REPRESENTATIVES OF THE TOWN OF MILFORD, AND POLICE AND FIRE DEPARTMENTS.
14. CONTRACTOR SHALL RELOCATE CHAIN-LINK FENCING AND JERSEY BARRIERS, AS NECESSARY, TO CONDUCT ITS WORK ACTIVITIES, UNLESS OTHERWISE NOTED.
15. CONTRACTOR SHALL REDIRECT EXISTING UTILITIES THAT OUTLET TO THE SOUHEGAN RIVER DURING EXCAVATION ACTIVITIES TO PRECLUDE UNNECESSARY COLLECTION AND TREATMENT.
16. CONTRACTOR SHALL BE RESPONSIBLE FOR COMPLYING WITH ALL PROVISIONS OF THE RIGHT-OF-ENTRY AGREEMENT EXECUTED BETWEEN THE GENERAL ELECTRIC COMPANY AND PROPERTY OWNERS.
17. CONTRACTOR SHALL NOT BE ALLOWED TO EXCAVATE WITHIN ELM STREET (I.E., PARTIALLY CLOSE ELM STREET) WHEN ANY PORTION OF MILL STREET IS CLOSED.
18. FOR CLEAN BACKFILL STAGING AREA(S), THE CONTRACTOR SHALL PLACE GRAVEL AND A GEOTEXTILE PRIOR TO THE PLACEMENT OF MATERIALS IN THE STAGING AREA(S) (REFER TO DETAIL 5 ON DRAWING G-25). THE CONTRACTOR SHALL PLACE AN IMPERMEABLE COVER OVER THE MATERIALS IN THE STAGING AREA(S) TO LIMIT EXPOSURE TO WIND AND PRECIPITATION. THE IMPERMEABLE COVER SHALL BE ANCHORED BY THE CONTRACTOR, AS NECESSARY, TO RESIST WIND FORCES AND SHALL BE INSTALLED TO MINIMIZE PONDING OF PRECIPITATION. THE CONTRACTOR SHALL NOT BE PERMITTED TO UTILIZE SOIL, DEBRIS, EXCAVATED SOIL, OR OTHER MATERIALS AS ANCHORING MATERIALS THAT COULD CREATE POTENTIAL SEDIMENTATION AND EROSION IMPACTS TO STORM WATER RUN-OFF.

1"=30' (30' 0 30' 60')

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Professional Engineer's Name: LOWELL W. McBURNEY
Professional Engineer's No.: 10767
State: NH | Date Signed: | Project Mgr.: CRA
Designed by: MAM | Drawn by: . | Checked by: LAF

DRAFT FOR EPA REVIEW

ARCADIS
ARCADIS U.S., INC.

GENERAL ELECTRIC COMPANY
FLETCHER'S PAINT WORKS AND STORAGE FACILITY SUPERFUND SITE
MILFORD, NEW HAMPSHIRE
FINAL (100%) DESIGN REPORT

SITE PREPARATION PLAN - ELM STREET AREA

ARCADIS Project No. B0020985.0002.00006
Date NOVEMBER 2012
ARCADIS OF NEW YORK
6723 TOWPATH ROAD
P.O. BOX 66
SYRACUSE, NEW YORK
TEL. 315.446.9120

G-4A

CITY: SYRACUSE-NY DIV/GROUP: ENVCAD DB: DMW GMS LAF LD: PIC: PM: TM: LYR:ON=*;OFF=*REF*
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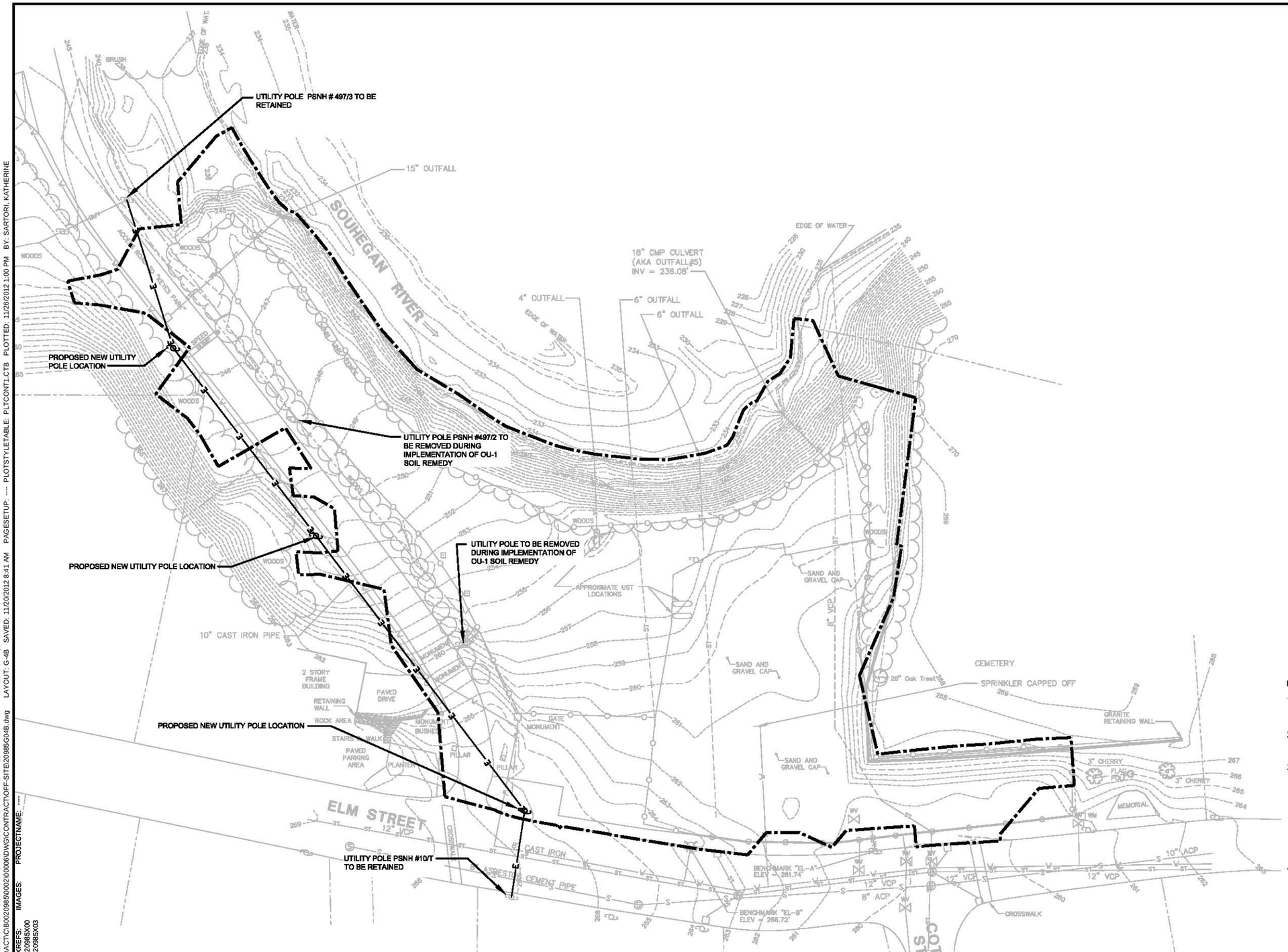
XREFS: 20985X00 20985X03 IMAGES: PROJECTNAME: ----



LEGEND:

- CHAIN LINK FENCE
- PROPOSED PERMANENT ELECTRICAL SERVICE WIRE
- EXISTING ELECTRICAL SERVICE WIRE TO BE REMOVED/ RELOCATED
- PROPOSED UTILITY POLE
- REMEDIAL EXCAVATION LIMITS (BY OTHERS)
- ST — EXISTING STORM SEWER
- W — EXISTING WATER LINE
- S — EXISTING SANITARY SEWER
- EDGE OF PAVEMENT
- PROPERTY LINE
- RIGHT-OF-WAY
- EXISTING EDGE OF WATER
- UTILITY POLE
- CATCH BASIN
- SANITARY MANHOLE
- STORM MANHOLE
- WV — WATER VALVE
- WM — WATER METER
- TELEPHONE JACK
- FIRE HYDRANT
- ACP — ASBESTOS CONCRETE PIPE
- VCP — VITRIFIED CLAY PIPE

NOTES:

1. THE PROPOSED UTILITY POLE LOCATIONS SHOWN ON THIS FIGURE ARE SUBJECT TO REVIEW AND APPROVAL BY FAIRPOINT COMMUNICATIONS AND/OR PUBLIC SERVICE OF NEW HAMPSHIRE.
2. LOCATIONS OF EXISTING STRUCTURES AND LIMITS OF EXCAVATION ARE APPROXIMATE. CONTRACTOR SHALL FIELD VERIFY ALL LOCATIONS PRIOR TO CONSTRUCTION ACTIVITIES.
3. SUBCONTRACTORS TO FAIRPOINT COMMUNICATIONS WILL BE RESPONSIBLE FOR INSTALLATION OF THE NEW UTILITY POLES. THOSE SUBCONTRACTORS WILL BE RESPONSIBLE FOR DRILLING THE HOLES, CONTAINERIZTING THE SOIL CUTTINGS, SETTING THE NEW POLES, AND ANY NECESSARY CLEARING OF LIMBS/VEGETATION. FAIRPOINT COMMUNICATIONS AND PUBLIC SERVICE NEW HAMPSHIRE WILL BE RESPONSIBLE FOR RELOCATING THE OVERHEAD UTILITIES. GE'S CONTRACTOR WILL BE RESPONSIBLE FOR COORDINATING THE TRANSPIRATION OF THE CONTAINERIZED SOIL CUTTINGS AND CLEARED VEGETATION TO THE APPROPRIATE OFF-SITE DISPOSAL FACILITIES. THE EXISTING UTILITY POLES SHALL BE REMOVED BY THE CONTRACTOR, DURING IMPLEMENTATION OF THE OU-1 SOIL REMEDY.
4. REFER TO DRAWINGS G-1, G-2, AND G-32 FOR GENERAL NOTES PERTAINING TO BASE MAPPING, CONTRACT REQUIREMENTS, AND SITE INFORMATION.

CITY: SYRACUSE DIV/GROUP: ENVCAD DB: S. KOWALCZYK L. FORAKER LD: PIC: PM: TM: LYR:ON=*;OFF=*REF*
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Professional Engineer's Name: LOWELL W. McBURNEY
Professional Engineer's No.: 10767

State	Date Signed	Project Mgr.
NH		CRA
Designed by	Drawn by	Checked by
MAM	-	LAF

DRAFT FOR EPA REVIEW

ARCADIS U.S., INC.

GENERAL ELECTRIC COMPANY
FLETCHER'S PAINT WORKS AND STORAGE FACILITY SUPERFUND SITE
MILFORD, NEW HAMPSHIRE
FINAL (100%) DESIGN REPORT

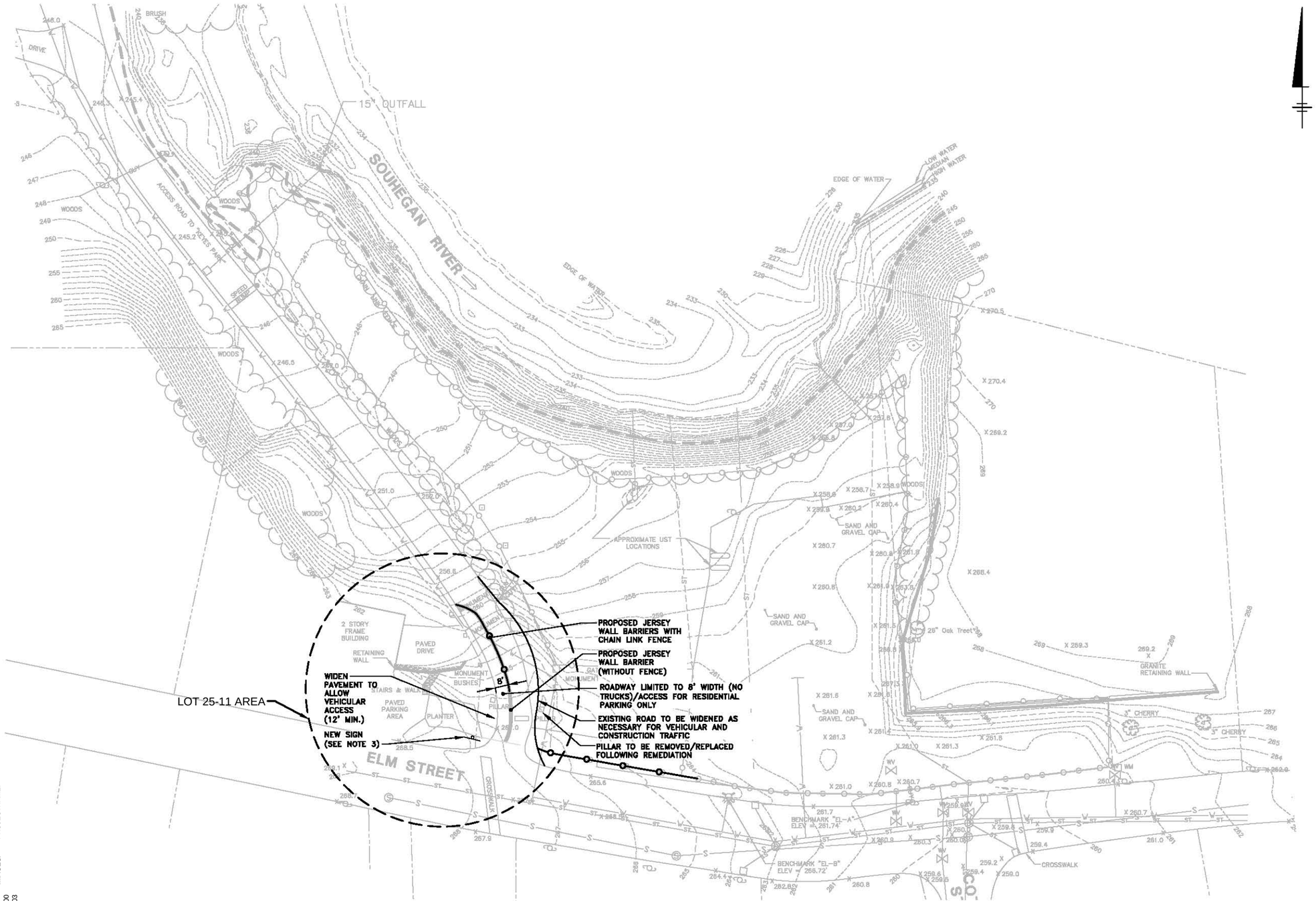
UTILITY POLE RELOCATION PLAN - ELM STREET AREA

ARCADIS Project No. B0020985.0002.00006

Date NOVEMBER 2012

ARCADIS OF NEW YORK
6723 TOWPATH ROAD
P.O. BOX 66
SYRACUSE, NEW YORK
TEL. 315.446.9120

G-4B



LEGEND:

- EXISTING INDEX SURFACE ELEVATION CONTOUR
- EXISTING INTERMEDIATE SURFACE ELEVATION CONTOUR
- CHAIN LINK FENCE
- JERSEY WALL BARRIER WITH CHAIN LINK FENCE
- APPROXIMATE ELEVATION OF 100-YEAR FLOOD PLAIN (245)
- INFERRED UTILITY LOCATION
- EXISTING STORM SEWER
- EXISTING WATER LINE
- EXISTING SANITARY SEWER
- EDGE OF PAVEMENT
- PROPERTY LINE
- RIGHT-OF-WAY
- EXISTING EDGE OF WATER
- ORANGE SAFETY FENCING
- JERSEY WALL BARRIER WITH CHAIN LINK FENCE (SEE DETAIL 6 ON DRAWING G-25)
- PROPOSED JERSEY WALL BARRIER
- UTILITY POLE
- CATCH BASIN
- SANITARY MANHOLE
- STORM MANHOLE
- WATER VALVE
- WATER METER
- TELEPHONE JACK
- FIRE HYDRANT
- ASBESTOS CONCRETE PIPE
- VITRIFIED CLAY PIPE

NOTES:

1. REFER TO DRAWINGS G-1, G-2, AND G-32 FOR GENERAL NOTES PERTAINING TO BASE MAPPING, CONTRACT REQUIREMENTS, AND SITE INFORMATION.
2. TEMPORARY JERSEY WALL BARRIERS WITH CHAIN LINK FENCING SHALL HAVE 6-FEET HIGH CHAIN LINK POSTS WITH FENCING FABRIC FASTENED TO THE TOP. GREEN HEDGE SLATS SHALL BE INSERTED BETWEEN THE WEAVES OF THE CHAIN LINKS TO PROVIDE PRIVACY AND ACT AS A NOISE AND DUST BARRIER FOR CONSTRUCTION ACTIVITIES. SEE DETAIL 6 ON DRAWING G-25.
3. CONTRACTOR SHALL INSTALL SIGN AT INTERSECTION OF ELM STREET AND KEYES DRIVE INDICATING THAT KEYES DRIVE IS A PRIVATE DRIVE AND THRU TRAFFIC IS NOT ALLOWED.

CITY: SYRACUSE DIV/GROUP: ENVCAD DB: DMW LJP GMS LD: LD: PIC: PIC: PM: PM: TM: LYR:ON=*;OFF=*REF*
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Professional Engineer's Name: LOWELL W. McBURNEY
Professional Engineer's No.: 10767
State: NH | Date Signed: | Project Mgr.: CRA
Designed by: MAM | Drawn by: . | Checked by: LAF

DRAFT FOR EPA REVIEW

ARCADIS
ARCADIS U.S., INC.

GENERAL ELECTRIC COMPANY
FLETCHER'S PAINT WORKS AND STORAGE FACILITY SUPERFUND SITE
MILFORD, NEW HAMPSHIRE
FINAL (100%) DESIGN REPORT

TEMPORARY RESIDENTIAL ACCESS ROADWAY PLAN - ELM STREET AREA

ARCADIS Project No. B0020985.0002.00006
Date NOVEMBER 2012

ARCADIS OF NEW YORK
6723 TOWPATH ROAD
P.O. BOX 66
SYRACUSE, NEW YORK
TEL. 315.446.9120

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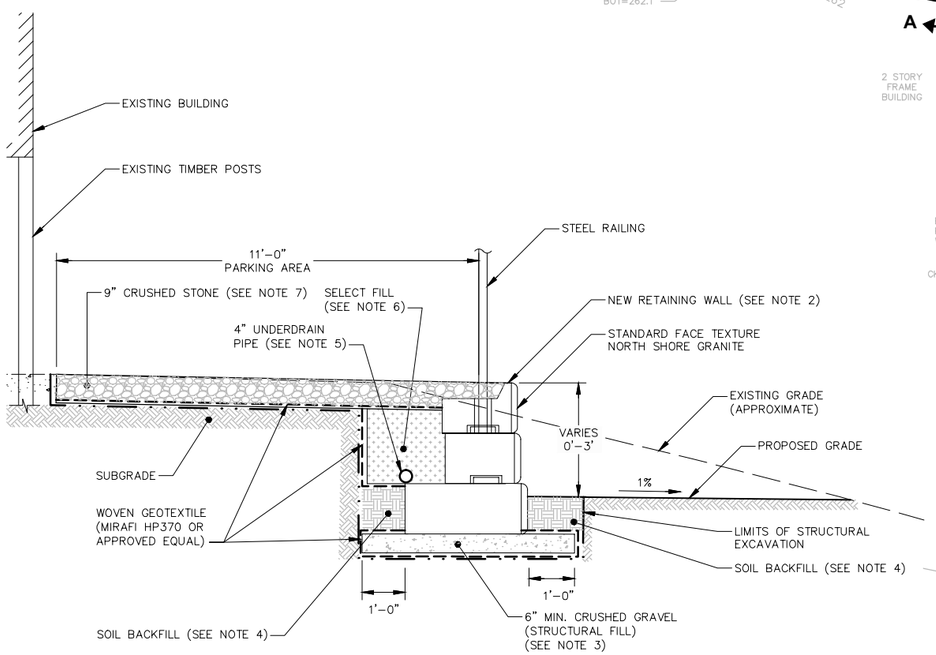

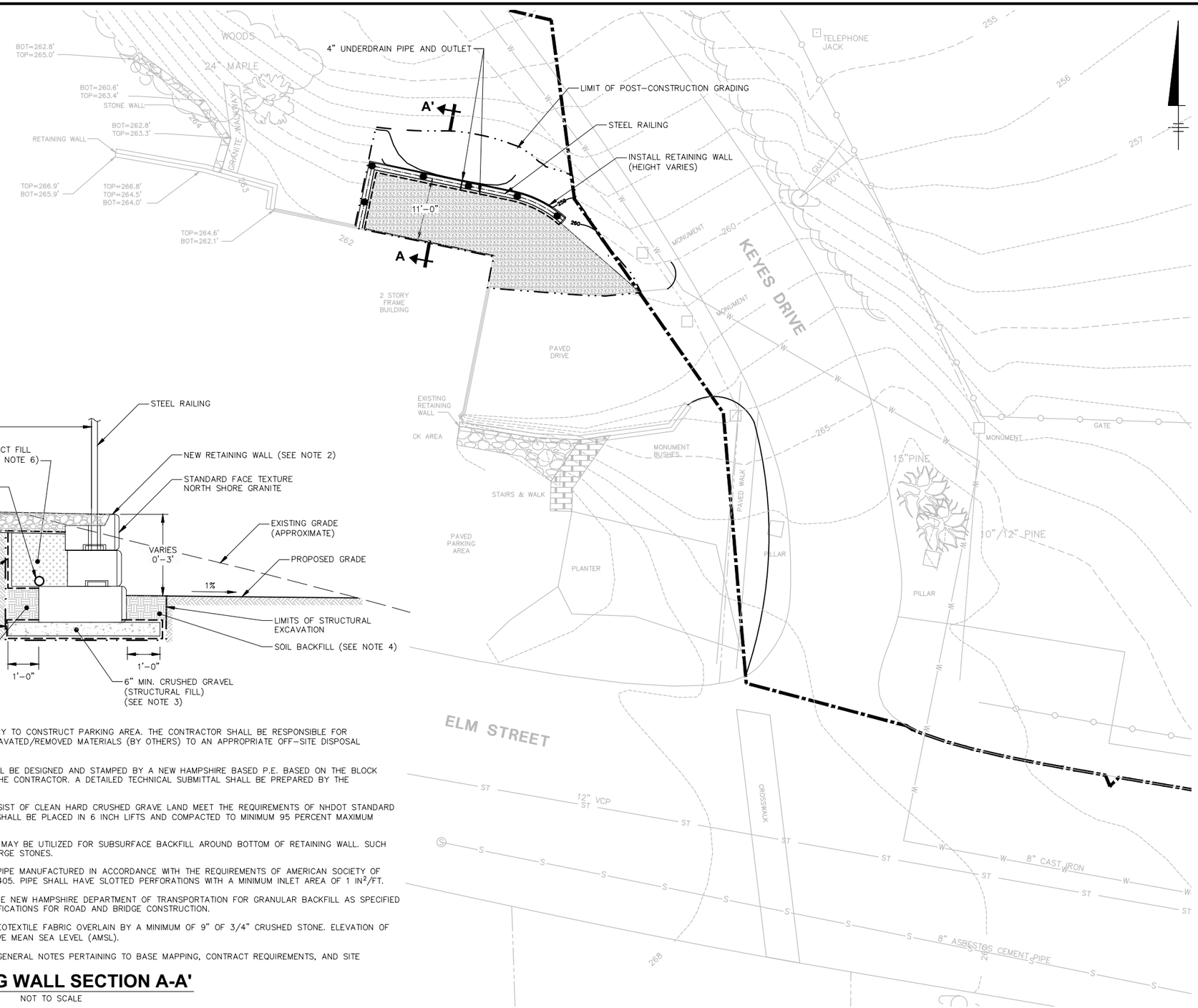

LEGEND:

- 260 — EXISTING INDEX SURFACE ELEVATION CONTOUR
- 259 — EXISTING INTERMEDIATE SURFACE ELEVATION CONTOUR
- 257 — PROPOSED SURFACE ELEVATION CONTOUR
- LIMITS OF REMEDIAL EXCAVATION
- LIMITS OF EXCAVATION FOR PARKING AREA
- CHAIN LINK FENCE
- ST — EXISTING STORM SEWER
- W — EXISTING WATER LINE
- S — EXISTING SANITARY SEWER
- EDGE OF PAVEMENT
- PROPERTY LINE
- UTILITY POLE
- CATCH BASIN
- SANITARY MANHOLE

NOTES:

1. THE CONTRACTOR SHALL EXCAVATE AS NECESSARY TO CONSTRUCT PARKING AREA. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING THE TRANSPORTATION OF ALL EXCAVATED/REMOVED MATERIALS (BY OTHERS) TO AN APPROPRIATE OFF-SITE DISPOSAL FACILITY(IES).
2. CONCRETE BLOCK WALL WITH STEEL RAILING SHALL BE DESIGNED AND STAMPED BY A NEW HAMPSHIRE BASED P.E. BASED ON THE BLOCK TYPE, SIZE, AND CONFIGURATION PROPOSED BY THE CONTRACTOR. A DETAILED TECHNICAL SUBMITTAL SHALL BE PREPARED BY THE CONTRACTOR FOR REVIEW BY THE ENGINEER.
3. CRUSHED GRAVEL (STRUCTURAL FILL) SHALL CONSIST OF CLEAN HARD CRUSHED GRAVE LAND MEET THE REQUIREMENTS OF NHDOT STANDARD SPECIFICATIONS SECTION 304. CRUSHED GRAVEL SHALL BE PLACED IN 6 INCH LIFTS AND COMPACTED TO MINIMUM 95 PERCENT MAXIMUM DENSITY.
4. SOIL EXCAVATED TO CONSTRUCT RETAINING WALL MAY BE UTILIZED FOR SUBSURFACE BACKFILL AROUND BOTTOM OF RETAINING WALL. SUCH SOIL BACKFILL MUST BE FREE OF DEBRIS AND LARGE STONES.
5. UNDERDRAIN PIPE SHALL BE CORRUGATED HDPE PIPE MANUFACTURED IN ACCORDANCE WITH THE REQUIREMENTS OF AMERICAN SOCIETY OF TESTING AND MATERIALS SPECIFICATION ASTM F-405. PIPE SHALL HAVE SLOTTED PERFORATIONS WITH A MINIMUM INLET AREA OF 1 IN^2/FT.
6. SELECT FILL WILL MEET THE REQUIREMENTS OF THE NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION FOR GRANULAR BACKFILL AS SPECIFIED IN SECTION 209.3 OF THE 2010 STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION.
7. PARKING AREA SHALL BE CONSTRUCTED USING GEOTEXTILE FABRIC OVERLAIN BY A MINIMUM OF 9" OF 3/4" CRUSHED STONE. ELEVATION OF PARKING SURFACE TO BE BUILT UP TO 261' ABOVE MEAN SEA LEVEL (AMSL).
8. REFER TO DRAWINGS G-1, G-2, AND G-32 FOR GENERAL NOTES PERTAINING TO BASE MAPPING, CONTRACT REQUIREMENTS, AND SITE INFORMATION.

RETAINING WALL SECTION A-A'

NOT TO SCALE

CITY: SYRACUSE DIV/GROUP: ENVCAD DB: S. KOWALCZYK P. LISTER L. FORAKER LD: LD: PIC: PIC: PM: PM: TM: LYR:ON=*;OFF=*REF** PAGESETUP: ---- PLOTSTYLETABLE: PLTCONT1.CTB PLOTTED: 11/26/2012 12:59 PM BY: SARTORI, KATHERINE
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1"=10'

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Professional Engineer's Name: LOWELL W. McBURNEY		
Professional Engineer's No.: 10767		
State: NH	Date Signed:	Project Mgr.: CRA
Designed by: MAM	Drawn by: .	Checked by: LAF

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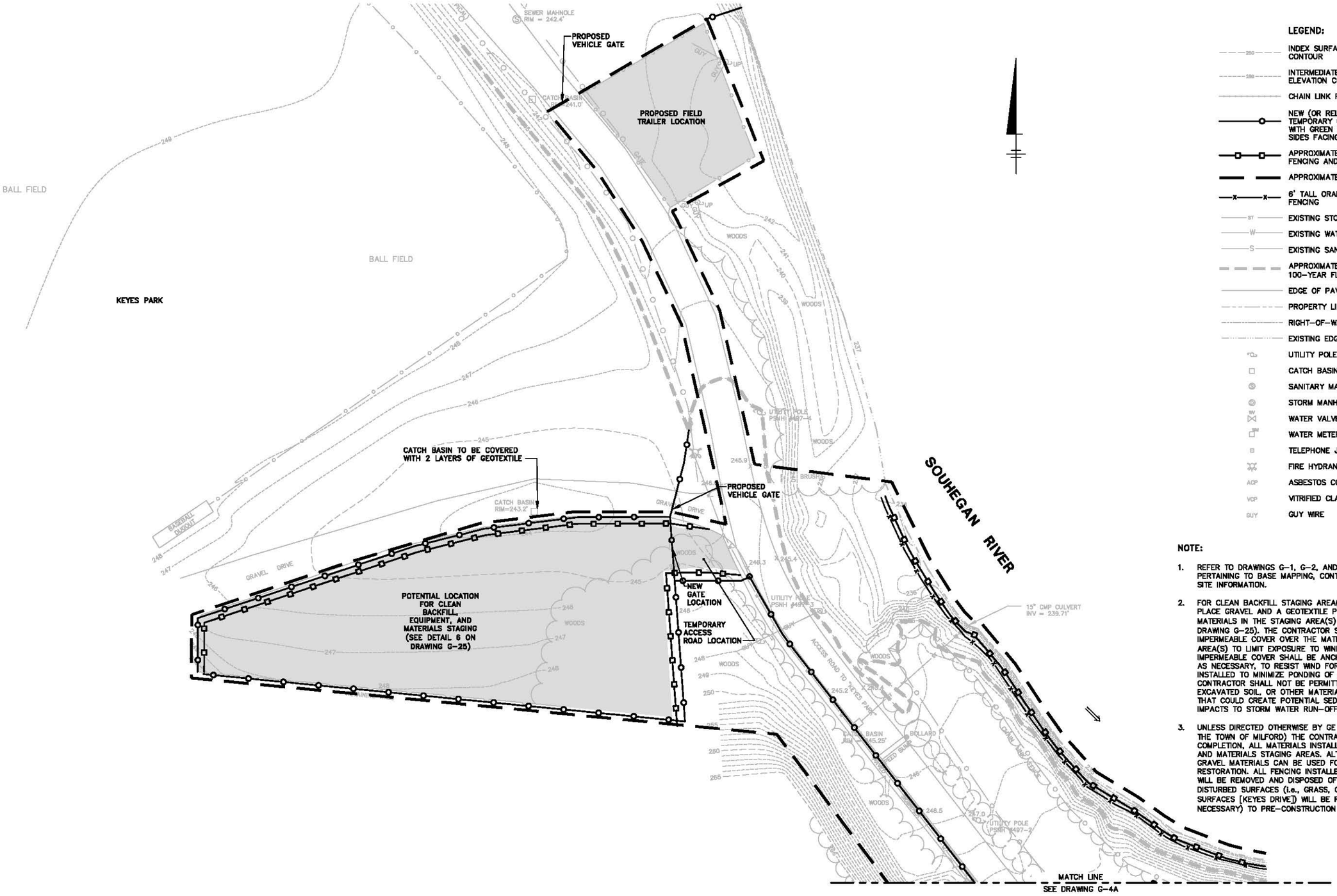
ARCADIS
ARCADIS U.S., INC.

GENERAL ELECTRIC COMPANY
FLETCHER'S PAINT WORKS AND STORAGE FACILITY SUPERFUND SITE
MILFORD, NEW HAMPSHIRE
FINAL (100%) DESIGN REPORT

PARKING AREA PLAN - PARCEL 25-11

ARCADIS Project No. B0020985.0002.00006
Date NOVEMBER 2012
ARCADIS OF NEW YORK
6723 TOWPATH ROAD
P.O. BOX 66
SYRACUSE, NEW YORK
TEL. 315.446.9120

G-4D



LEGEND:

- INDEX SURFACE ELEVATION CONTOUR
- INTERMEDIATE SURFACE ELEVATION CONTOUR
- CHAIN LINK FENCE
- NEW (OR RELOCATED) TEMPORARY CHAINLINK FENCE WITH GREEN HEDGE SLATS ON SIDES FACING KEYES PARK
- APPROXIMATE LOCATION OF SILT FENCING AND STRAW BALES
- APPROXIMATE LIMITS OF WORK
- 6' TALL ORANGE-SAFETY FENCING
- ST — EXISTING STORM SEWER
- W — EXISTING WATER LINE
- S — EXISTING SANITARY SEWER
- APPROXIMATE ELEVATION OF 100-YEAR FLOOD PLAIN (245)
- EDGE OF PAVEMENT
- PROPERTY LINE
- RIGHT-OF-WAY
- EXISTING EDGE OF WATER
- UTILITY POLE
- CATCH BASIN
- SANITARY MANHOLE
- STORM MANHOLE
- WV — WATER VALVE
- WM — WATER METER
- TELEPHONE JACK
- FIRE HYDRANT
- ACP — ASBESTOS CONCRETE PIPE
- VCP — VITRIFIED CLAY PIPE
- GUY — GUY WIRE

NOTE:

1. REFER TO DRAWINGS G-1, G-2, AND G-32 FOR GENERAL NOTES PERTAINING TO BASE MAPPING, CONTRACT REQUIREMENTS, AND SITE INFORMATION.
2. FOR CLEAN BACKFILL STAGING AREA(S), THE CONTRACTOR SHALL PLACE GRAVEL AND A GEOTEXTILE PRIOR TO THE PLACEMENT OF MATERIALS IN THE STAGING AREA(S) (REFER TO DETAIL 5 ON DRAWING G-25). THE CONTRACTOR SHALL PLACE AN IMPERMEABLE COVER OVER THE MATERIALS IN THE STAGING AREA(S) TO LIMIT EXPOSURE TO WIND AND PRECIPITATION. THE IMPERMEABLE COVER SHALL BE ANCHORED BY THE CONTRACTOR, AS NECESSARY, TO RESIST WIND FORCES AND SHALL BE INSTALLED TO MINIMIZE PONDING OF PRECIPITATION. THE CONTRACTOR SHALL NOT BE PERMITTED TO UTILIZE SOIL, DEBRIS, EXCAVATED SOIL, OR OTHER MATERIALS AS ANCHORING MATERIALS THAT COULD CREATE POTENTIAL SEDIMENTATION AND EROSION IMPACTS TO STORM WATER RUN-OFF.
3. UNLESS DIRECTED OTHERWISE BY GE (BASED ON REQUESTS FROM THE TOWN OF MILFORD) THE CONTRACTOR SHALL REMOVE AT JOB COMPLETION, ALL MATERIALS INSTALLED FOR CLEAN EQUIPMENT AND MATERIALS STAGING AREAS. ALTERNATIVELY, SOIL AND GRAVEL MATERIALS CAN BE USED FOR BACKFILL AS PART OF SITE RESTORATION. ALL FENCING INSTALLED DURING SITE PREPARATION WILL BE REMOVED AND DISPOSED OF ACCORDINGLY. ALL DISTURBED SURFACES (i.e., GRASS, GRAVEL, AND/OR PAVED SURFACES [KEYES DRIVE]) WILL BE RESTORED (OR REPLACED, IF NECESSARY) TO PRE-CONSTRUCTION CONDITIONS.

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XREFS: 20985X00 20985X06 IMAGES: PROJECTNAME: ----

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Professional Engineer's Name: LOWELL W. McBURNEY
Professional Engineer's No.: 10767

State	Date Signed	Project Mgr.
NH		CRA
Designed by	Drawn by	Checked by
MAM		LAF

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ARCADIS
ARCADIS U.S., INC.

GENERAL ELECTRIC COMPANY
FLETCHER'S PAINT WORKS AND STORAGE FACILITY SUPERFUND SITE
MILFORD, NEW HAMPSHIRE
FINAL (100%) DESIGN REPORT

SITE PREPARATION/RESTORATION PLAN - KEYES PARK

ARCADIS Project No. B0020985.0002.00006
Date NOVEMBER 2012

ARCADIS OF NEW YORK
6723 TOWPATH ROAD
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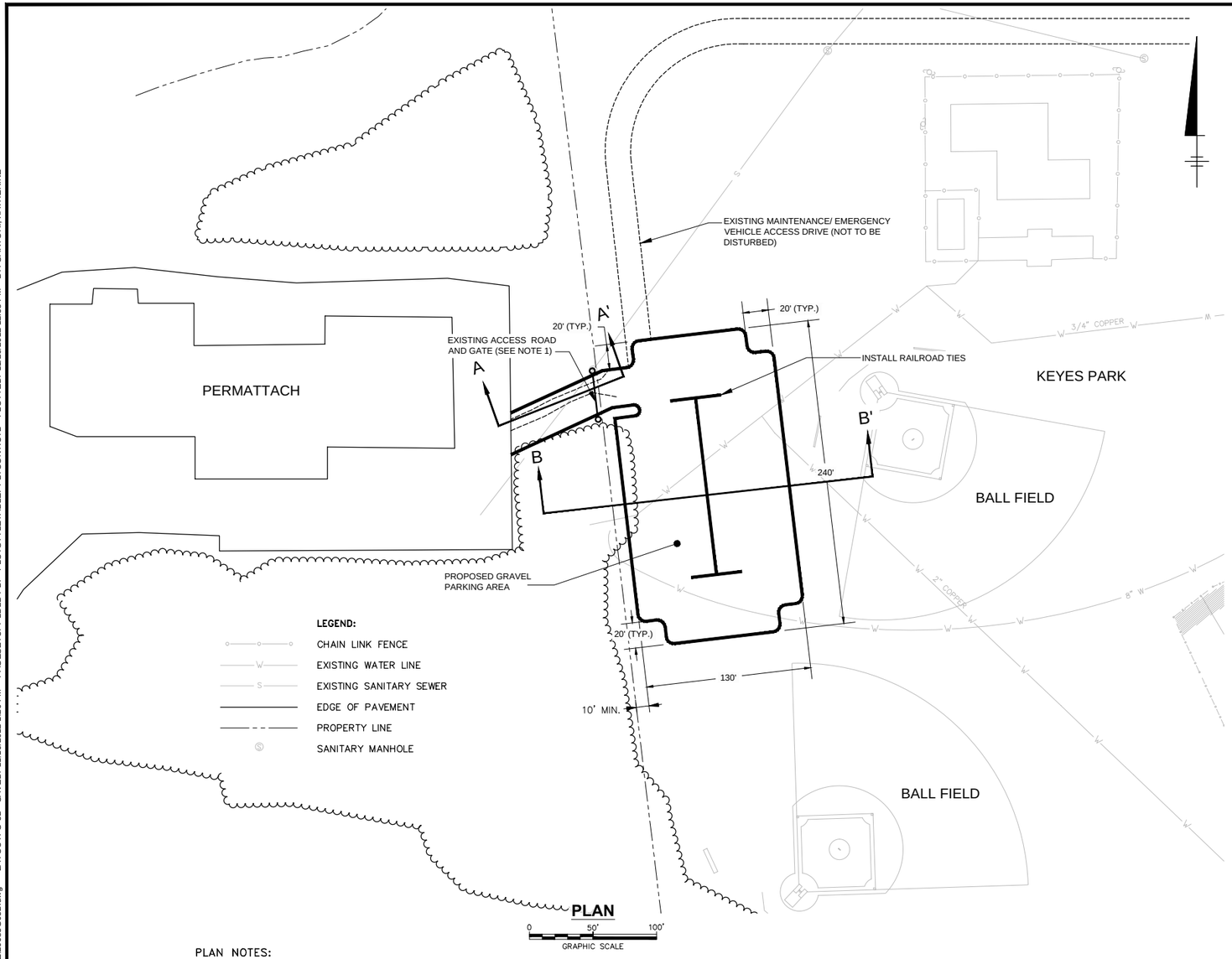
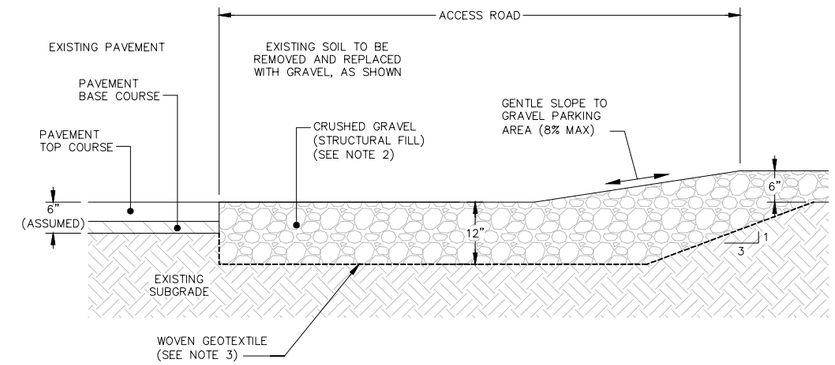
G-5A

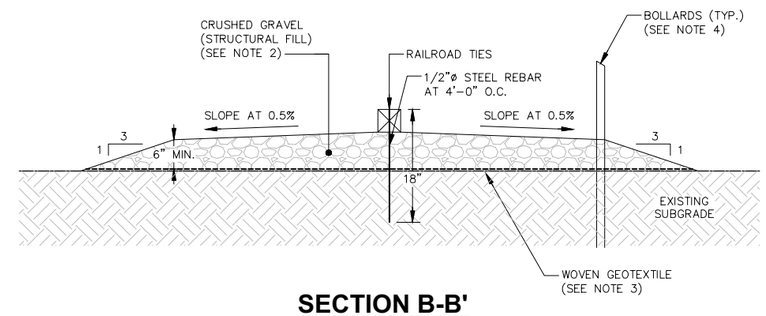


PLAN



SECTION A-A'

NOT TO SCALE



SECTION B-B'

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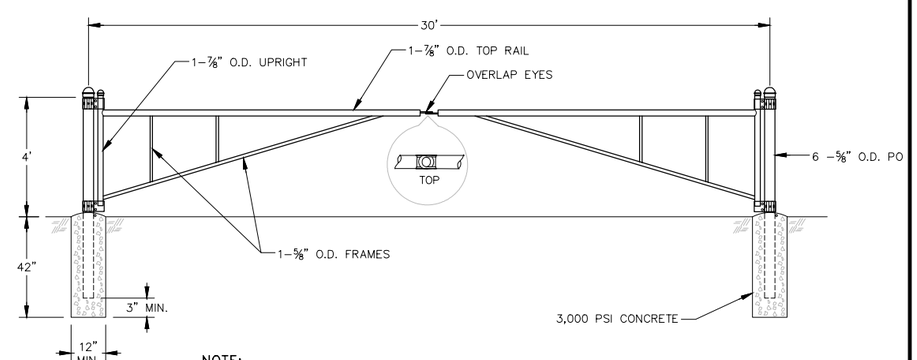

NOTE:

1. STEEL PIPE SHALL BE SCHEDULE 40 IN ACCORDANCE WITH ASTM A123.

STANDARD DOUBLE BAR GATE (1)

NOT TO SCALE

PLAN NOTES:

1. EXISTING DIRT ACCESS ROAD TO BE REMOVED TO A DEPTH OF 12 INCHES AND REPLACED WITH GRAVEL. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING THE TRANSPORTATION OF ALL EXCAVATED/REMOVED MATERIALS (BY OTHERS) TO AN APPROPRIATE OFF-SITE DISPOSAL FACILITY(IES). ACCESS ROAD TO BE WIDENED FROM APPROXIMATELY 12 FEET TO 30 FEET TO ACCOMMODATE TWO WAY TRAFFIC AND EMERGENCY VEHICLE ACCESS. EXISTING GATE TO BE REMOVED AND REPLACED WITH NEW 30 FOOT GATE (SEE DETAIL 1 – THIS DRAWING).
2. CRUSHED GRAVEL (STRUCTURAL FILL) SHALL CONSIST OF CLEAN, HARD CRUSHED GRAVEL AND MEET THE REQUIREMENTS OF NHDOT STANDARD SPECIFICATIONS SECTION 304. CRUSHED GRAVEL SHALL BE PLACED IN 6 INCH LIFTS AND COMPACTED TO MINIMUM 95 PERCENT MAXIMUM DENSITY.
3. WOVEN GEOTEXTILE SHALL BE MIRAFI HP370 OR APPROVED EQUAL.
4. BOLLARDS SHALL BE 4"X4"X8' AND TAPERED ON TOP END. BOLLARDS WILL BE INSTALLED WITH A 4-FOOT BURY DEPTH AND SPACED 6 FEET ON CENTER. BOLLARDS WILL BE PLACED ALONG PERIMETER OF GRAVEL PARKING LOT (EXCEPT AT ENTRANCE TO LOT) AND ALONG BOTH SIDES OF NEW ACCESS ROAD (EXCEPT AT INTERSECTION WITH EXISTING MAINTENANCE/EMERGENCY VEHICLE ACCESS DRIVE). BOLLARDS WILL NOT BE PLACE ALONG EXISTING MAINTENANCE/EMERGENCY VEHICLE ACCESS DRIVE.
3. UNLESS DIRECTED OTHERWISE BY GE (BASED ON REQUESTS FROM THE TOWN OF MILFORD) THE CONTRACTOR SHALL REMOVE AT JOB COMPLETION, ALL MATERIALS INSTALLED FOR CLEAN EQUIPMENT AND MATERIALS STAGING AREAS. ALTERNATIVELY, SOIL AND GRAVEL MATERIALS CAN BE USED FOR BACKFILL AS PART OF SITE RESTORATION. ALL FENCING INSTALLED DURING SITE PREPARATION WILL BE REMOVED AND DISPOSED OF ACCORDINGLY. ALL DISTURBED SURFACES (i.e., GRASS, GRAVEL, AND/OR PAVED SURFACES [KEYES DRIVE]) WILL BE RESTORED (OR REPLACED, IF NECESSARY) TO PRE-CONSTRUCTION CONDITIONS.

CITY: SYRACUSE DIV/GROUP: ENVCAD DB: S. KOWALCZYK L. FORAKER LD: PIC: PM: TM: LYR:ON=*;OFF=*REF* PAGESETUP: LD2B-PDF PLOTSTYLETABLE: PLTCONT.CTB PLOTTED: 11/26/2012 12:58 PM BY: SARTORI, KATHERINE
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Professional Engineer's Name: LOWELL W. McBURNEY
Professional Engineer's No.: 10767

State	Date Signed	Project Mgr.
NH		CRA
Designed by	Drawn by	Checked by
MAM		

DRAFT FOR EPA REVIEW

ARCADIS

ARCADIS U.S., INC.

GENERAL ELECTRIC COMPANY
FLETCHER'S PAINT WORKS AND STORAGE FACILITY SUPERFUND SITE
MILFORD, NEW HAMPSHIRE
FINAL (100%) DESIGN REPORT

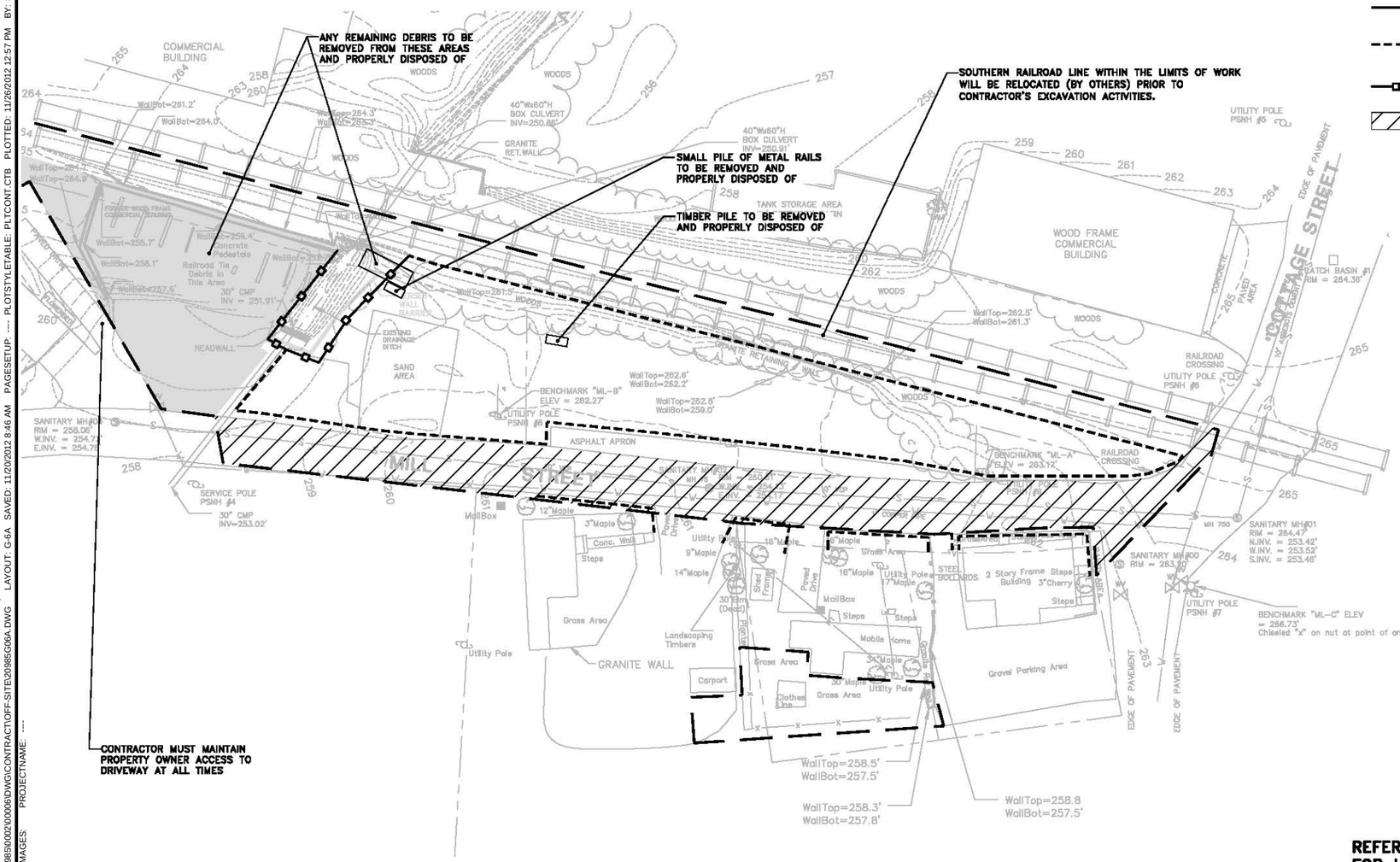
ALTERNATE ACCESS/PARKING AREA PLAN - KEYES PARK

ARCADIS Project No. B0020985.0002.00006

Date NOVEMBER 2012

ARCADIS OF NEW YORK
6723 TOWPATH ROAD
P.O. BOX 66
SYRACUSE, NEW YORK
TEL. 315.446.9120

G-5B



REFER TO DRAWING G-6C FOR LOCATIONS OF DUST AND TRAFFIC BARRIERS

LEGEND:

- EXISTING INDEX SURFACE ELEVATION CONTOUR
- EXISTING INTERMEDIATE SURFACE ELEVATION CONTOUR
- EXISTING STORM SEWER
- EXISTING WATER LINE
- EXISTING SANITARY SEWER
- EDGE OF PAVEMENT
- PROPERTY LINE
- RIGHT-OF-WAY
- EDGE OF DITCH
- EXISTING RAILROAD TRACKS
- APPROXIMATE LIMITS OF WORK (SEE NOTE 3)
- APPROXIMATE LOCATION OF EROSION CONTROL FENCING (SEE NOTE 4)
- APPROXIMATE LOCATION OF SILT FENCING AND STRAW BALES (SEE NOTE 4)
- LIMITED USE AREA (SEE NOTE 13)
- UTILITY POLE
- CATCH BASIN
- SANITARY MANHOLE
- STORM MANHOLE
- WATER VALVE
- WATER METER
- TELEPHONE JACK
- FIRE HYDRANT
- ACP ASBESTOS CONCRETE PIPE
- VCP VITRIFIED CLAY PIPE

NOTES:

1. REFER TO DRAWINGS G-1, G-3, AND G-32 FOR GENERAL NOTES PERTAINING TO BASE MAPPING, CONTRACT REQUIREMENTS, AND SITE INFORMATION.
2. ALL WORK SHALL BE PERFORMED WITHIN THE PROJECT LIMITS. WORK DEEMED NECESSARY TO BE PERFORMED OUTSIDE THE LIMITS OF WORK SHALL BE APPROVED BY THE OWNER AND THE GENERAL ELECTRIC COMPANY PRIOR TO THE COMMENCEMENT OF SUCH WORK.
3. IT IS THE CONTRACTOR'S RESPONSIBILITY TO ESTABLISH, MAINTAIN, AND PROTECT THE PROJECT LIMITS INCLUDING SUPPORT ZONES, EXCLUSION ZONES, AND CONTAMINATION REDUCTION ZONES FOR EACH AND EVERY PHASE OF WORK AS PART OF THIS CONTRACT. A SECURE SITE IS TO BE MAINTAINED AT ALL TIMES. CONTRACTOR SHALL INSTALL TEMPORARY FENCING AND WARNING SIGNS ALONG THE APPROXIMATE LIMITS OF WORK (OR USE EXISTING, AS APPROPRIATE) AS NECESSARY TO MINIMIZE PEDESTRIAN OR OTHER UN-AUTHORIZED PERSONNEL FROM ACCESSING THE WORK SITE.
4. SILT FENCING AND OTHER SEDIMENT AND EROSION CONTROL MEASURES SHALL BE ESTABLISHED AND MAINTAINED BY THE CONTRACTOR AS APPROPRIATE TO CONTROL SEDIMENT/PARTICULATE OFF-SITE MIGRATION. THE FINAL LOCATIONS OF THESE CONTROLS WILL BE DETERMINED AND/OR MODIFIED IN THE FIELD BASED ON SITE-SPECIFIC CONSIDERATIONS RELATED TO DRAINAGE, TOPOGRAPHY, EXCAVATION SEQUENCING, ETC.
5. THE AREAS LOCATED WITHIN THE APPROXIMATE LIMITS OF WORK ARE AVAILABLE FOR USE BY THE CONTRACTOR DURING REMEDIAL ACTIVITIES.
6. THE CONTRACTOR SHALL REMOVE AND PROPERLY DISPOSE OF ALL ABOVEGROUND DEBRIS, BRUSH, LOGS, TREES, STUMPS, REFUSE, AND RUBBISH FROM WITHIN THE PROJECT LIMITS, AS REQUIRED TO PERFORM THE WORK.
7. THE CONTRACTOR SHALL RESTORE TO PRE-REMEDIAL CONDITIONS ALL SUPPORT AREAS THAT ARE IMPACTED BY REMEDIAL ACTIVITIES, INCLUDING BUT NOT LIMITED TO, EQUIPMENT AND MATERIALS STORAGE AREAS, MATERIAL LOADING AND STAGING AREAS, PARKING AREAS, AND LOCATIONS OF OFFICE TRAILERS; EXCEPT AS NOTED OTHERWISE IN THE CONTRACT DOCUMENTS.
8. THE DRAWINGS MAY NOT INDICATE ALL EXISTING SURFACE FEATURES SUBJECT TO REPLACEMENT AS PART OF SITE RESTORATION ACTIVITIES. THIS WILL NOT RELIEVE THE CONTRACTOR FROM REPLACING ANY AND ALL SUCH ITEMS IDENTIFIED DURING THE PERFORMANCE OF THE WORK. ANY AND ALL SUCH ITEMS IDENTIFIED ON THE DRAWINGS AND/OR DURING THE PERFORMANCE OF THE WORK SHALL BE REPLACED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE GENERAL ELECTRIC COMPANY.
9. THE CONTRACTOR SHALL MAKE EVERY ATTEMPT TO MINIMIZE DISTURBANCE/DAMAGE TO EXISTING STRUCTURES (E.G., RAILROAD TRACKS) LOCATED WITHIN OR NEAR THE SITE THAT ARE TO REMAIN. DAMAGE TO EXISTING STRUCTURES SHALL BE REPAIRED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE GENERAL ELECTRIC COMPANY.
10. ALL OPERATIONAL INLET STRUCTURES (CATCH BASINS, MANHOLES, ETC.) SHALL BE PROTECTED DURING THE CONSTRUCTION ACTIVITIES. ADEQUATE MEASURES SHALL BE INSTALLED TO PREVENT SILT AND SEDIMENT FROM ENTERING THE INLET STRUCTURES.
11. THE CONTRACTOR SHALL OBSERVE ALL EXISTING ROAD/BRIDGE WEIGHT LIMITS/RESTRICTIONS WHEN HAULING MATERIALS AND/OR TRANSPORTING HEAVY EQUIPMENT TO AND FROM THE SITE.
12. THE CONTRACTOR SHALL CONTROL DUST, VAPORS, AND ODORS THAT RESULT FROM THE REMEDIAL ACTIVITIES TO MEET ESTABLISHED AMBIENT STANDARDS.
13. LAND LOCATED WITHIN MILL STREET AND COTTAGE STREET RIGHT-OF-WAY SHALL BE USED ONLY AS NECESSARY TO CONDUCT LIMITED EXCAVATION, AS REQUIRED. WORK IN THIS AREA SHALL BE COORDINATED BY THE CONTRACTOR SO AS TO MINIMIZE TRAFFIC INTERRUPTIONS ALONG MILL AND COTTAGE STREETS, AS WELL AS TO MAINTAIN A SECURE WORK SITE. CONTRACTOR SHALL ALSO BE RESPONSIBLE FOR COORDINATING COMPLETE OR PARTIAL (E.G., ONE LANE) TRAFFIC CLOSURE WITH LOCAL MUNICIPAL AUTHORITIES PRIOR TO CONDUCTING WORK IN THIS AREA. CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING APPROPRIATE WARNING SIGNS AND FLAG PERSONS TO CONTROL TRAFFIC DURING PERIODS IN WHICH ACTIVE WORK ACTIVITIES ARE BEING CONDUCTED ON OR NEAR THE MILL STREET AND COTTAGE STREET RIGHT-OF-WAYS.
14. CONTRACTOR SHALL REMOVE AND DISPOSE OF WIRE-MESH FENCING AND OTHER ABOVE-GROUND APPURTENANCES, AS NECESSARY, TO CONDUCT ITS WORK ACTIVITIES, UNLESS OTHERWISE NOTED.
15. CONTRACTOR SHALL BE RESPONSIBLE FOR COMPLYING WITH ALL PROVISIONS OF THE RIGHT-OF-ENTRY AGREEMENT EXECUTED BETWEEN THE GENERAL ELECTRIC COMPANY AND PROPERTY OWNERS.
16. CONTRACTOR SHALL NOT BE ALLOWED TO EXCAVATE WITHIN ELM STREET (I.E., PARTIALLY CLOSE ELM STREET) WHEN ANY PORTION OF MILL STREET IS CLOSED.

CITY: SYRACUSE DIV/GROUP: ENVCAD DB: DWM LJP LAF LD: PIC: PM: TM: LYR:ON=*;OFF=*REF*
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1"=30' 30' 0 30' 60'

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Professional Engineer's Name: LOWELL W. McBURNEY
Professional Engineer's No.: 10767
State: NH | Date Signed: | Project Mgr.: CRA
Designed by: MAM | Drawn by: . | Checked by: .

DRAFT FOR EPA REVIEW

ARCADIS

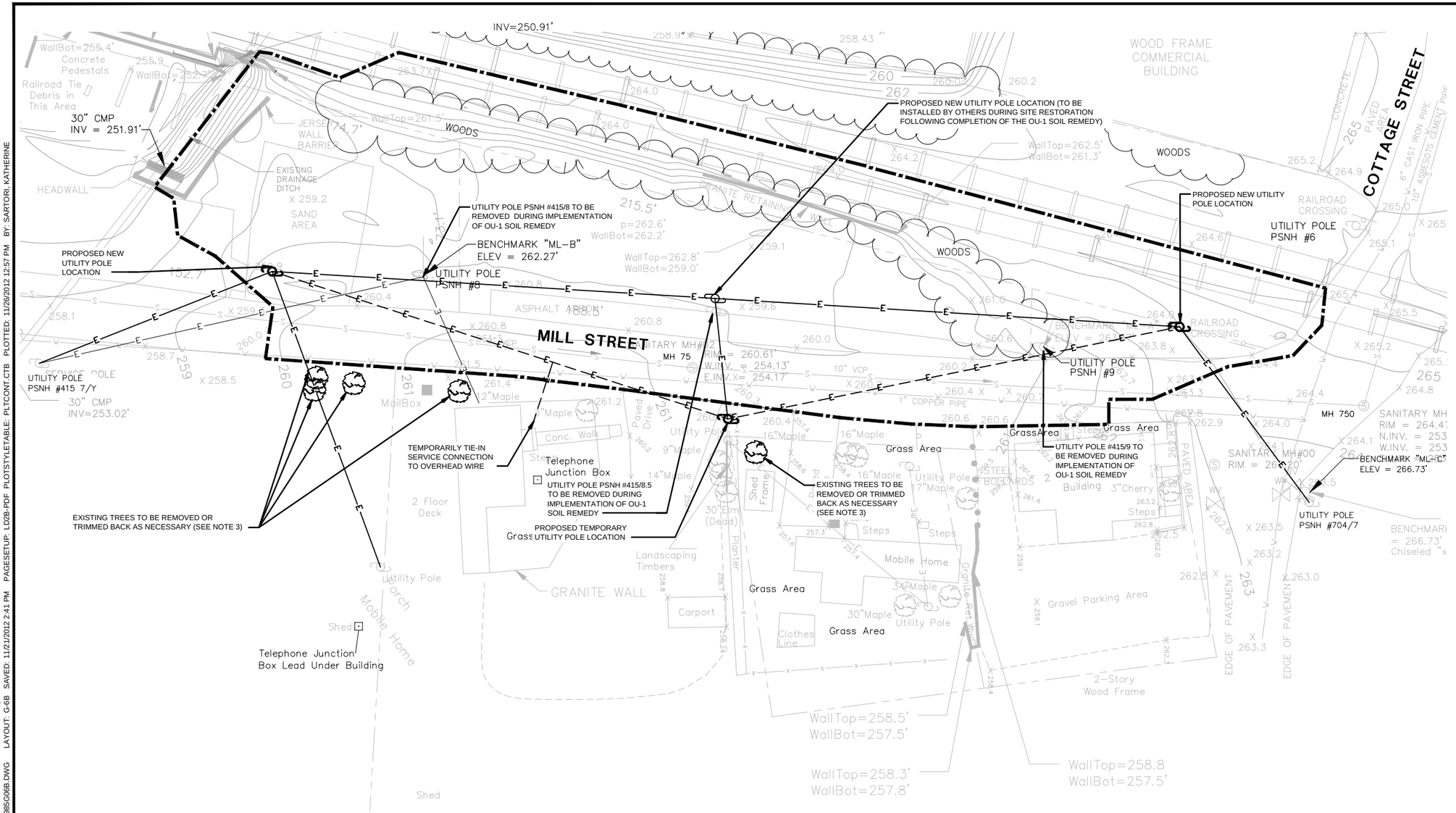
ARCADIS U.S., INC.

GENERAL ELECTRIC COMPANY
FLETCHER'S PAINT WORKS AND STORAGE FACILITY SUPERFUND SITE
MILFORD, NEW HAMPSHIRE
FINAL (100%) DESIGN REPORT

SITE PREPARATION PLAN - MILL STREET AREA

ARCADIS Project No. B0020985.0002.00006
Date NOVEMBER 2012
ARCADIS OF NEW YORK
6723 TOWPATH ROAD
P.O. BOX 66
SYRACUSE, NEW YORK
TEL. 315.446.9120

G-6A



LEGEND:

- EXISTING JERSEY WALL BARRIER
- EXISTING OVERHEAD ELECTRIC
- EXISTING STORM SEWER
- EXISTING WATER LINE
- EXISTING SANITARY SEWER
- EDGE OF PAVEMENT
- PROPERTY LINE
- RIGHT-OF-WAY
- EDGE OF DITCH
- EXISTING RAILROAD TRACKS
- WIRE MESH FENCE
- PROPOSED PERMANENT ELECTRICAL SERVICE WIRE
- TEMPORARY LOCATION OF ELECTRICAL SERVICE WIRE DURING IMPLEMENTATION OF OU-1 SOIL REMEDY
- EXISTING ELECTRICAL SERVICE WIRE TO BE REMOVED/RELOCATED
- PROPOSED PERMANENT/TEMPORARY UTILITY POLE
- REMEDIAL EXCAVATION LIMITS (BY OTHERS)
- UTILITY POLE
- CATCH BASIN
- SANITARY MANHOLE
- STORM MANHOLE
- WATER VALVE
- WATER METER
- TELEPHONE JACK
- FIRE HYDRANT

NOTES:

1. THE PROPOSED UTILITY POLE LOCATIONS SHOWN ON THIS FIGURE ARE SUBJECT TO REVIEW AND APPROVAL BY FAIRPOINT COMMUNICATIONS, PUBLIC SERVICE OF NEW HAMPSHIRE, AND (FOR EASTERNMOST PROPOSED NEW POLE) PAN AM RAILWAYS.
2. LOCATIONS OF EXISTING STRUCTURES ARE APPROXIMATE. CONTRACTOR SHALL FIELD VERIFY ALL LOCATIONS PRIOR TO CONSTRUCTION ACTIVITIES.
3. SUBCONTRACTORS TO FAIRPOINT COMMUNICATIONS WILL BE RESPONSIBLE FOR INSTALLATION OF THE NEW UTILITY POLES. THOSE SUBCONTRACTORS WILL BE RESPONSIBLE FOR DRILLING THE HOLES, CONTAINERIZTING THE SOIL CUTTINGS, SETTING THE NEW POLES, AND ANY NECESSARY CLEARING OF LIMBS/VEGETATION. FAIRPOINT COMMUNICATIONS AND PUBLIC SERVICE NEW HAMPSHIRE WILL BE RESPONSIBLE FOR RELOCATING THE OVERHEAD UTILITIES. GE'S CONTRACTOR WILL BE RESPONSIBLE FOR COORDINATING THE TRANSPIRATION OF THE CONTAINERIZED SOIL CUTTINGS AND CLEARED VEGETATION TO THE APPROPRIATE OFF-SITE DISPOSAL FACILITIES. THE EXISTING UTILITY POLES SHALL BE REMOVED BY THE CONTRACTOR, DURING IMPLEMENTATION OF THE OU-1 SOIL REMEDY.
4. REFER TO DRAWINGS G-1, G-2, AND G-32 FOR GENERAL NOTES PERTAINING TO BASE MAPPING, CONTRACT REQUIREMENTS, AND SITE INFORMATION.

CITY: SYRACUSE DIV/GROUP: ENVCAD DB: S. KOWALCZYK L: FORAKER LD: PIC: PM: TM: LYR:ON=*;OFF=*REF** PAGESETUP: LD2B-PDF PLOTSTYLETABLE: PLTCONT.CTB PLOTTED: 11/26/2012 12:57 PM BY: SARTORI, KATHERINE
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Professional Engineer's Name: LOWELL W. McBURNEY
Professional Engineer's No.: 10767
State: NH | Date Signed: | Project Mgr.: CRA
Designed by: MAM | Drawn by: | Checked by:

DRAFT FOR EPA REVIEW

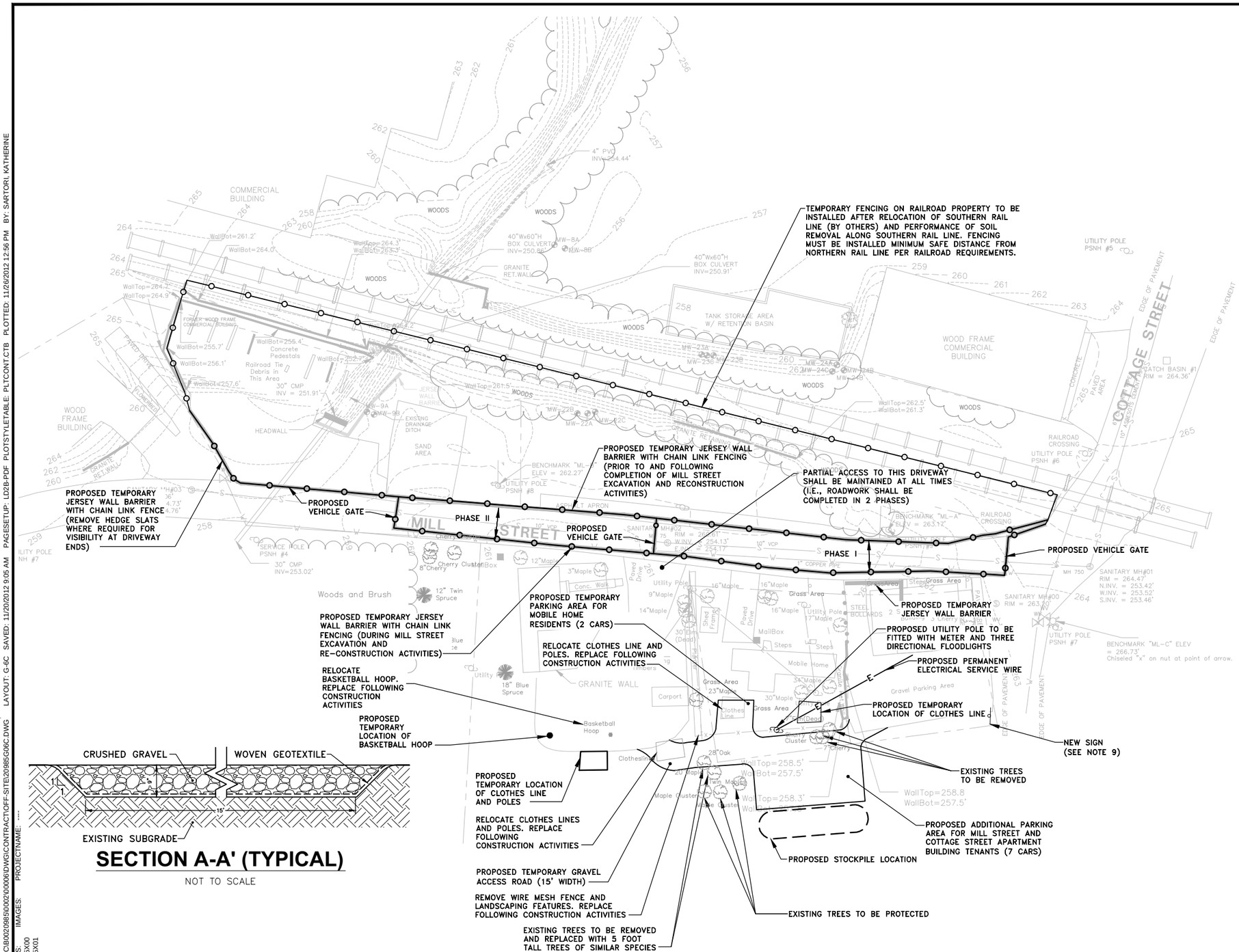
ARCADIS U.S., INC.

GENERAL ELECTRIC COMPANY
FLETCHER'S PAINT WORKS AND STORAGE FACILITY SUPERFUND SITE
MILFORD, NEW HAMPSHIRE
FINAL (100%) DESIGN REPORT

UTILITY POLE RELOCATION PLAN - MILL STREET AREA

ARCADIS Project No. B0020985.0002.00006
Date NOVEMBER 2012
ARCADIS OF NEW YORK
6723 TOWPATH ROAD
P.O. BOX 66
SYRACUSE, NEW YORK
TEL. 315.446.9120

G-6B



SECTION A-A' (TYPICAL)

NOT TO SCALE

LEGEND:

- EXISTING INDEX SURFACE ELEVATION CONTOUR
- EXISTING INTERMEDIATE SURFACE ELEVATION CONTOUR
- EXISTING JERSEY WALL BARRIER
- EXISTING STORM SEWER
- EXISTING WATER LINE
- EXISTING SANITARY SEWER
- EDGE OF PAVEMENT
- PROPERTY LINE
- RIGHT-OF-WAY
- EDGE OF DITCH
- EXISTING RAILROAD TRACKS
- EXISTING MONITORING WELL
- WIRE MESH FENCE
- PROPOSED LIMITS OF EXCAVATION
- PROPOSED JERSEY WALL BARRIER WITH CHAIN LINK FENCE (GATES WHERE NEEDED) (SEE DETAIL 6 ON DRAWING G-25)
- PROPOSED NEW (OR RELOCATED) TEMPORARY FENCING
- PROPOSED JERSEY WALL BARRIER
- UTILITY POLE
- CATCH BASIN
- SANITARY MANHOLE
- STORM MANHOLE
- WATER VALVE
- WATER METER
- TELEPHONE JACK
- FIRE HYDRANT
- ASBESTOS CONCRETE PIPE
- VITRIFIED CLAY PIPE

NOTES:

1. REFER TO DRAWINGS G-1, G-3, AND G-32 FOR GENERAL NOTES PERTAINING TO BASE MAPPING, CONTRACT REQUIREMENTS, AND SITE INFORMATION.
2. LOCATIONS OF EXISTING STRUCTURES AND EXCAVATION AREAS ARE APPROXIMATE. CONTRACTOR SHALL FIELD VERIFY ALL LOCATIONS PRIOR TO CONSTRUCTION ACTIVITIES.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR IDENTIFYING, PROTECTING, AND RELOCATING (AS NECESSARY) ALL UTILITIES (OVERHEAD AND UNDERGROUND) THAT MAY BE IMPACTED BY CONSTRUCTION ACTIVITIES.
4. THE CONTRACTOR SHALL CONTROL DUST, VAPORS, AND ODORS THAT RESULT FROM THE REMEDIAL ACTIVITIES TO MEET ESTABLISHED AMBIENT STANDARDS.
5. TEMPORARY JERSEY WALL BARRIERS WITH CHAIN LINK FENCING SHALL HAVE 6-FEET HIGH CHAIN LINK POSTS WITH FENCING FABRIC FASTENED TO THE TOP. GREEN HEDGE SLATS SHALL BE INSERTED BETWEEN THE WEAVES OF THE CHAIN LINKS TO PROVIDE PRIVACY AND ACT AS A NOISE AND DUST BARRIER FROM CONSTRUCTION ACTIVITIES. SEE DETAIL 6 ON DRAWING G-25.
6. TEMPORARY 10-FOOT WIDE ACCESS ROAD SHALL BE CONSTRUCTED USING GEOTEXTILE FABRIC OVERLAIN BY A MINIMUM OF 12-INCHES OF RUN-OF-CRUSHER STONE.
7. SEE DRAWING T-2 FOR PHASING OF REPAVING ACTIVITIES AT THE MILL STREET AREA.
8. GATES WITHIN FENCING SHALL BE INSTALLED WHERE NECESSARY TO ACCESS/EXIT SITE.
9. CONTRACTOR SHALL INSTALL SIGN INDICATING DRIVEWAY IS A PRIVATE DRIVE AND THRU TRAFFIC IS NOT ALLOWED.

CITY: SYRACUSE DIV/GROUP: ENVCAD DB: DMW LAF LJP LD: PIC: PM: TM: LYR:ON=*;OFF=*REF=*
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1"=30'

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Professional Engineer's Name: LOWELL W. McBURNEY
Professional Engineer's No.: 10767
State: NH
Date Signed:
Project Mgr.: CRA
Designed by: MAM
Drawn by: .
Checked by: LAF

DRAFT FOR EPA REVIEW

ARCADIS

ARCADIS U.S., INC.

GENERAL ELECTRIC COMPANY
FLETCHER'S PAINT WORKS AND STORAGE FACILITY SUPERFUND SITE
MILFORD, NEW HAMPSHIRE
FINAL (100%) DESIGN REPORT

TEMPORARY RESIDENTIAL ACCESS ROADWAY PLAN - MILL STREET AREA

ARCADIS Project No. B0020985.0002.00006
Date NOVEMBER 2012

ARCADIS OF NEW YORK
6723 TOWPATH ROAD
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G-6C

CITY: SYRACUSE-NY DIV/GROUP: 141/ENV DB: DMW, LAF, GMS, B.PITTSLEY, K.SARTORI PIC:(Opt) PM:(Reqd) TM:(Opt) LYR:(Opt)ON=*;OFF=*REF*
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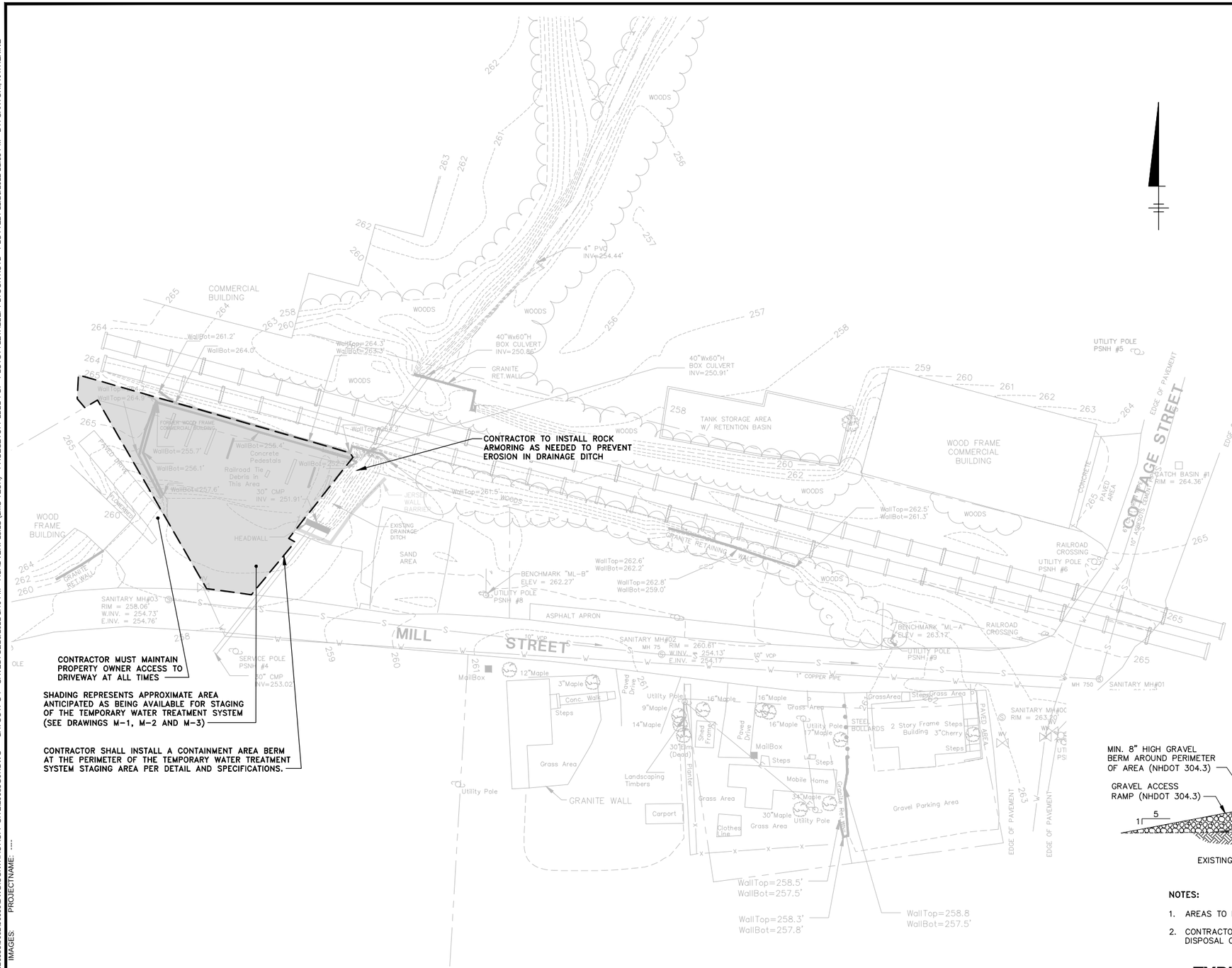
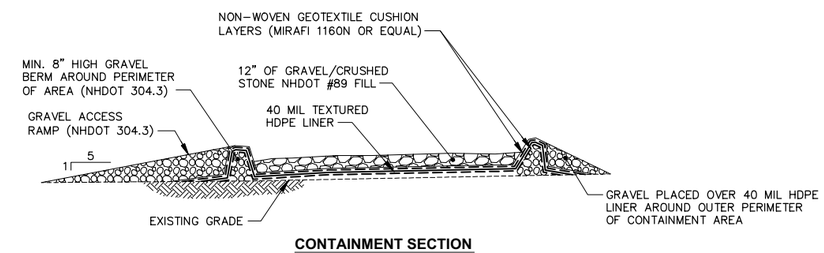


LEGEND:

- INDEX SURFACE ELEVATION CONTOUR
- INTERMEDIATE SURFACE ELEVATION CONTOUR
- EXISTING STORM SEWER
- EXISTING WATER LINE
- EXISTING SANITARY SEWER
- EDGE OF PAVEMENT
- PROPERTY LINE
- RIGHT-OF-WAY
- EDGE OF DITCH
- EXISTING RAILROAD TRACKS
- UTILITY POLE
- CATCH BASIN
- SANITARY MANHOLE
- STORM MANHOLE
- WATER VALVE
- WATER METER
- TELEPHONE JACK
- FIRE HYDRANT
- ASBESTOS CONCRETE PIPE
- VITRIFIED CLAY PIPE

NOTES:

1. REFER TO DRAWINGS G-1, G-3, AND G-32 FOR GENERAL NOTES PERTAINING TO BASE MAPPING, CONTRACT REQUIREMENTS, AND SITE INFORMATION.
2. CONTRACTOR SHALL NOT BE ALLOWED TO EXCAVATE WITHIN ELM STREET (I.E., PARTIALLY CLOSE ELM STREET) WHEN ANY PORTION OF MILL STREET IS CLOSED.
3. SEE DRAWING G-6C FOR LOCATION OF DUST AND TRAFFIC BARRIERS. MILL STREET MUST BE EXCAVATED IN PHASES AS DETAILED ON THAT DRAWING.
4. ALL LOCATIONS SHOWN ON THIS FIGURE ARE APPROXIMATE AND CONCEPTUAL. CONTRACTOR SHALL PROVIDE DETAILED STAGING AND PHASING PLANS FOR REVIEW BY GE. ALL PROPOSED STRUCTURES AND LOCATIONS SHALL BE INDICATED IN THOSE PLANS.
5. SEE DRAWINGS G-16 AND G-17 FOR PHASING OF SOIL REMOVAL ACTIVITIES.



CONTAINMENT SECTION

NOTES:

1. AREAS TO INCLUDE AN IMPERMEABLE LINER (40 MIL HDPE) AND BE SLOPED TO A SUMP.
2. CONTRACTOR RESPONSIBLE FOR CHARACTERIZATION, PROPER TRANSPORTATION AND OFF-SITE DISPOSAL OF ALL MATERIALS USED IN CONSTRUCTION OF CONTAINMENT AREA.

TYPICAL CONTAINMENT AREA DETAIL

NOT TO SCALE

1"=30' (30' 0 30' 60')

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Professional Engineer's Name: LOWELL W. McBURNEY
Professional Engineer's No.: 10767
State: NH | Date Signed: | Project Mgr.: CRA
Designed by: MAM | Drawn by: . | Checked by: LAF

DRAFT FOR EPA REVIEW

ARCADIS U.S., INC.

GENERAL ELECTRIC COMPANY
FLETCHER'S PAINT WORKS AND STORAGE FACILITY SUPERFUND SITE
MILFORD, NEW HAMPSHIRE
FINAL (100%) DESIGN REPORT

STAGING PLAN - TEMPORARY WATER TREATMENT SYSTEM

ARCADIS Project No. B0020985.0002.00006
Date NOVEMBER 2012
ARCADIS OF NEW YORK
6723 TOWPATH ROAD
P.O. BOX 66
SYRACUSE, NEW YORK
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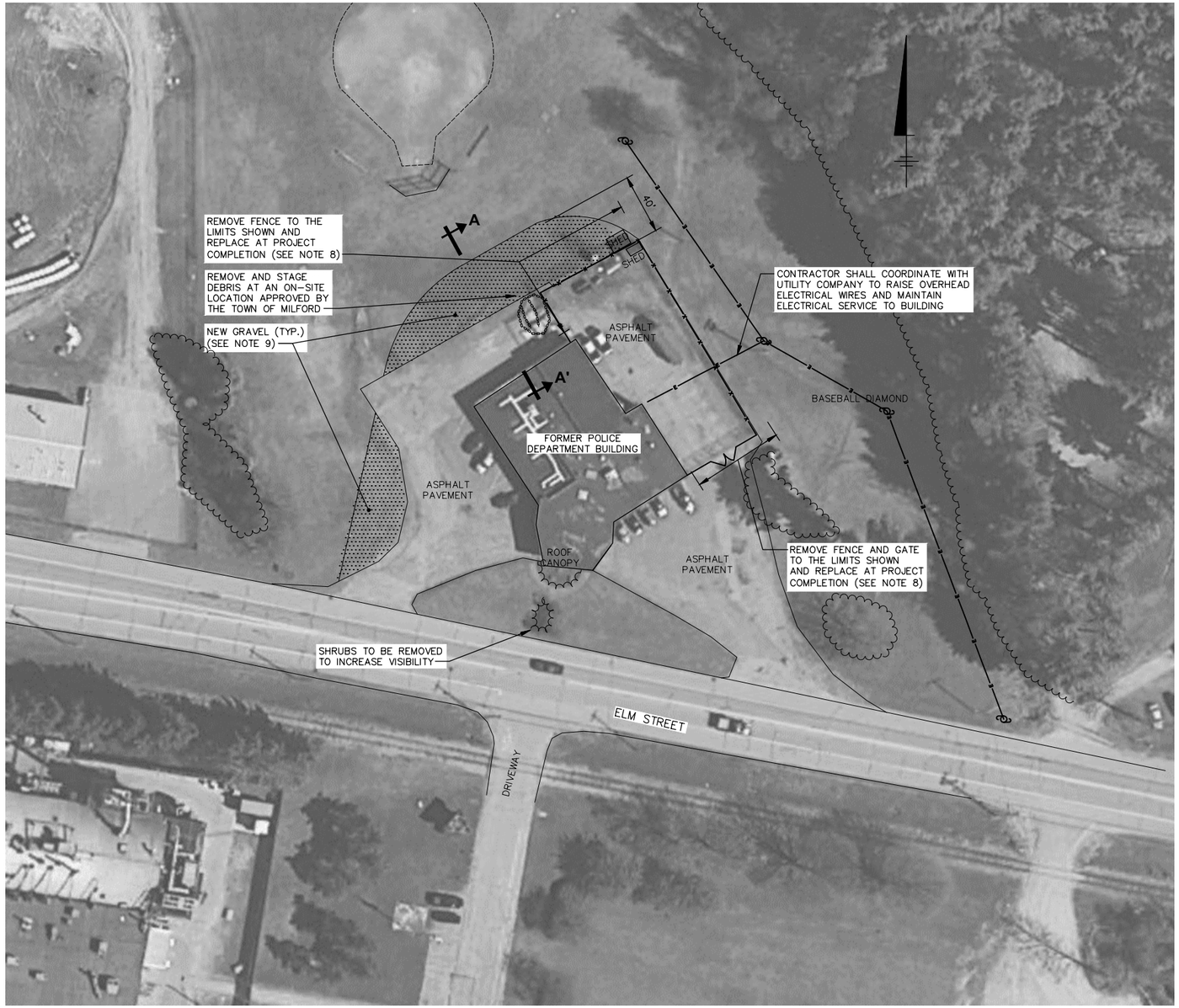
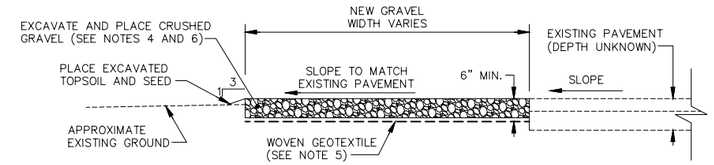
G-7



PLAN



SECTION A-A'

NOT TO SCALE

LEGEND:

- CHAIN LINK FENCE
- EDGE OF PAVEMENT
- OVERHEAD ELECTRICAL
- UTILITY POLE
- NEW GRAVEL

NOTES:

1. REFER TO FIGURE E–1 OF APPENDIX E OF FINAL DESIGN REPORT FOR PHYSICAL LOCATION OF PROPERTY.
2. REFER TO DRAWING G–32 FOR GENERAL NOTES PERTAINING TO CONTRACT REQUIREMENTS AND SITE INFORMATION.
3. BASE MAP FEATURES ARE BASED ON 2010 ORTHOPHOTOGRAPHY OBTAINED FROM NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION AND SITE PHOTOS. ALL LOCATIONS SHOWN ON THIS DRAWING ARE APPROXIMATE. THE CONTRACTOR SHALL FIELD VERIFY LOCATIONS AND DIMENSIONS SHOWN PRIOR TO COMMENCING WITH THE WORK.
4. A PRE–CONSTRUCTION SURVEY OF THE PROPERTY SHALL BE PERFORMED BY THE CONTRACTOR TO DOCUMENT THE EXISTING CONDITION OF THE PROPERTY AND TO FACILITATE PROPERTY RESTORATION AT THE COMPLETION OF THE PROJECT. THE SURVEY IS TO INCLUDE PHOTOGRAPHS AND FIELD MEASUREMENTS AS NEEDED TO ADEQUATELY ESTABLISH EXISTING SITE CONDITIONS.
5. CONTRACTOR SHALL STAGE EXCAVATED SOILS AT AN APPROVED LOCATION FOR REUSE/RESTORATION AT END OF PROJECT.
6. WOVEN GEOTEXTILE SHALL BE GEOTEX 315ST (AS MANUFACTURED BY PROPEX) OR AN APPROVED EQUAL.
7. CRUSHED GRAVEL SHALL CONSIST OF CLEAN, HARD CRUSHED GRAVEL AND MEET THE REQUIREMENTS OF NHDOT STANDARD SPECIFICATIONS SECTION 304. CRUSHED GRAVEL SHALL BE PLACED IN A SINGLE 6 INCH THICK LIFT AND COMPACTED TO MINIMUM 95 PERCENT MAXIMUM DENSITY.
8. FENCE POST HOLES WITHIN PAVEMENT AREAS SHALL BE FILLED TO GRADE WITH CRUSHED GRAVEL.
9. NEW GRAVEL WIDENING AREAS SHALL BE REMOVED AND RESTORED AT PROJECT COMPLETION IN ACCORDANCE WITH SECTION 02208 OF THE CONTRACT SPECIFICATIONS.

CITY: SYRACUSE-NY DIV/GROUP: 141/ENV DB: B.PITTSLEY G.STOWELL, K.SARTORI PIC:(Opt) PM:(Reqd) TM:(Opt) LYR:(Opt)ON=*;OFF=REF
V:\ENVCAD\SYRACUSE\ACT\CB\0020985\0002\00006\DWG\CONTRACT\OFF-SITE\20985G08.DWG LAYOUT: G-8 SAVED: 11/20/2012 4:41 PM ACADVER: 18.1S (LMS TECH) PAGESETUP: L02B-PDF PLOTSTYLETABLE: PLTCONT.CTB PLOTTED: 11/26/2012 12:54 PM BY: SARTORI, KATHERINE
XREFS: 20985X00 IMAGES: 20985X12.jpg PROJECTNAME: ----

1"=40' 40' 0 40' 80'

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No.	Date	Revisions	By	Ckd

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Professional Engineer's Name: **LOWELL W. McBURNEY**
Professional Engineer's No.: 10767
State: NH | Date Signed: | Project Mgr.: CRA
Designed by: MAM | Drawn by: . | Checked by: .

DRAFT FOR EPA REVIEW

ARCADIS
ARCADIS U.S., INC.

GENERAL ELECTRIC COMPANY
FLETCHER'S PAINT WORKS AND STORAGE FACILITY SUPERFUND SITE
MILFORD, NEW HAMPSHIRE
FINAL (100%) DESIGN REPORT

PRIMARY TRUCK STAGING AREA SITE MODIFICATIONS

ARCADIS Project No. B0020985.0002.00006
Date NOVEMBER 2012

ARCADIS OF NEW YORK
6723 TOWPATH ROAD
P.O. BOX 66
SYRACUSE, NEW YORK
TEL. 315.446.9120

G-8

LEGEND:

- GATE
- EDGE OF PAVEMENT
- EDGE OF GRAVEL ROAD
- OVERHEAD ELECTRICAL
- UTILITY POLE
- EXISTING TREE LINE
- EXISTING DEBRIS/BERM

NOTES:

1. REFER TO FIGURE E-1 OF APPENDIX E OF FINAL DESIGN REPORT FOR PHYSICAL LOCATION OF PROPERTY.
2. REFER TO DRAWING G-32 FOR GENERAL NOTES PERTAINING TO CONTRACT REQUIREMENTS AND SITE INFORMATION.
3. BASE MAP FEATURES ARE BASED ON 2010 ORTHOPHOTOGRAPHY OBTAINED FROM NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION AND SITE PHOTOS. ALL LOCATIONS SHOWN ON THIS DRAWING ARE APPROXIMATE. THE CONTRACTOR SHALL FIELD VERIFY LOCATIONS SHOWN PRIOR TO COMMENCING WITH THE WORK.
4. CONTRACTOR SHALL FILL HOLES/RUTS AND GRADE GRAVEL ROAD AND TURNAROUND TO ACCOMMODATE TRUCK TRAFFIC.
5. CONTRACTOR SHALL STAGE DEBRIS/BERM MATERIALS AT AN APPROVED LOCATION FOR REUSE/RESTORATION AT END OF PROJECT.

PLAN

CITY: SYRACUSE-NY DIV/GROUP: 141/ENV DB: B.PITTSLEY, K.SARTORI PIC:(Opt) PM:(Reqd) TM:(Opt) LYR:(Opt)ON=*;OFF=*REF*
V:\ENVCAD\SYRACUSE\ACT\CIB\0020985\0002\00006\DWG\CONTRACT\OFF-SITE\20985G09.DWG LAYOUT: G-9 SAVED: 11/21/2012 2:40 PM ACADVER: 18.1S (LMS TECH) PAGESETUP: ---- PLOTSTYLETABLE: PLTCONT.CTB PLOTTED: 11/26/2012 12:54 PM BY: SARTORI, KATHERINE
XREFS: 20985X02 20985X00 IMAGES: 20985X13.jpg PROJECTNAME: ----

60' 0 60' 120'
1"=60'

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Professional Engineer's Name: LOWELL W. McBURNEY
Professional Engineer's No.: 10767
State: NH | Date Signed: | Project Mgr.: CRA
Designed by: MAM | Drawn by: . | Checked by: .

DRAFT FOR EPA REVIEW

ARCADIS
ARCADIS U.S., INC.

GENERAL ELECTRIC COMPANY
FLETCHER'S PAINT WORKS AND STORAGE FACILITY SUPERFUND SITE
MILFORD, NEW HAMPSHIRE
FINAL (100%) DESIGN REPORT

OVERFLOW TRUCK STAGING AREA SITE MODIFICATIONS

ARCADIS Project No. B0020985.0002.00006
Date NOVEMBER 2012

ARCADIS OF NEW YORK
6723 TOWPATH ROAD
P.O. BOX 66
SYRACUSE, NEW YORK
TEL. 315.446.9120

G-9

LEGEND:

	UTILITY POLE
	CATCH BASIN
	SANITARY MANHOLE
	STORM MANHOLE
	WATER VALVE
	WATER METER
	TELEPHONE JACK
260	INDEX SURFACE ELEVATION CONTOUR
259	INTERMEDIATE SURFACE ELEVATION CONTOUR
	CHAIN LINK FENCE
	FIRE HYDRANT
	APPROXIMATE ELEVATION OF 100-YEAR FLOOD PLAIN
	EXCAVATION LIMITS
ELEV. 245 (12')	BOTTOM OF EXCAVATION ELEVATION (DEPTH SHOWN IN PARENTHESES REPRESENTS APPROXIMATE DEPTH OF SAMPLE(S) REQUIRING REMOVAL AND IS PROVIDED FOR INFORMATIONAL PURPOSES ONLY)
4'	DEPTH OF EXCAVATION (AS MEASURED FROM GROUND SURFACE EXCAVATION OR BOTTOM OF SAND CAP WHERE PRESENT) (SEE NOTES 2 AND 3)
A	EXCAVATION CELL ID
	EXCAVATION IN THIS AREA TO BE SLOPED FROM CELLS R AND Z TO CELLS X AND BB
	LIMITS OF NON-TSCA MATERIAL
	LIMITS OF TSCA MATERIAL

NOTES:

1. SEE DRAWING G-12 FOR FINAL SOIL REMOVAL LIMITS.
2. A SACRIFICIAL GEOTEXTILE LAYER AND A SAND CAP EXISTS OVER A MAJORITY OF THE SITE. CONTRACTOR SHALL REMOVE SAND CAP (TO WITHIN 3-INCHES OF THE GEOTEXTILE) AND STOCKPILE SAND ON-SITE FOR CONFIRMATION SOIL SAMPLING AND USE AS BACKFILL. THE THICKNESS OF THE SAND CAP VARIES ACROSS THE SITE AND IS DISCUSSED ON FIGURE 9 OF THE FINAL (100%) DESIGN REPORT.
3. EXCAVATION CELLS WITH NO ELEVATION REFERENCE SHALL BE EXCAVATED TO THE DESIGNATED DEPTH AS MEASURED FROM GROUND SURFACE OR THE GEOTEXTILE LAYER (IF WITHIN THE SAND CAP).
4. FOR CLARITY, NOT ALL EXISTING FEATURES ARE SHOWN. SEE DRAWING G-2 FOR ALL EXISTING SITE FEATURES AND CONDITIONS.
5. SEE S-SERIES DRAWINGS FOR SLOPING AND EXCAVATION SUPPORT REQUIREMENTS.

CITY: SYRACUSE-NY DIV/GROUP: 141ENV DB: DMW LAF LJP B.PITTSLEY G.STOWELL, K.SARTORI PIC:(Opt) PM:(Reqd) TM:(Opt) LYR:(Opt)ON=*;OFF=*REF
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XREFS: 20985X00 20985X03 IMAGES: PROJECTNAME: ----

30' 0 30' 60'
1"=30'

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Professional Engineer's Name: LOWELL W. McBURNEY
Professional Engineer's No.: 10767
State: NH | Date Signed: | Project Mgr.: CRA
Designed by: MAM | Drawn by: . | Checked by: LAF

DRAFT FOR EPA REVIEW

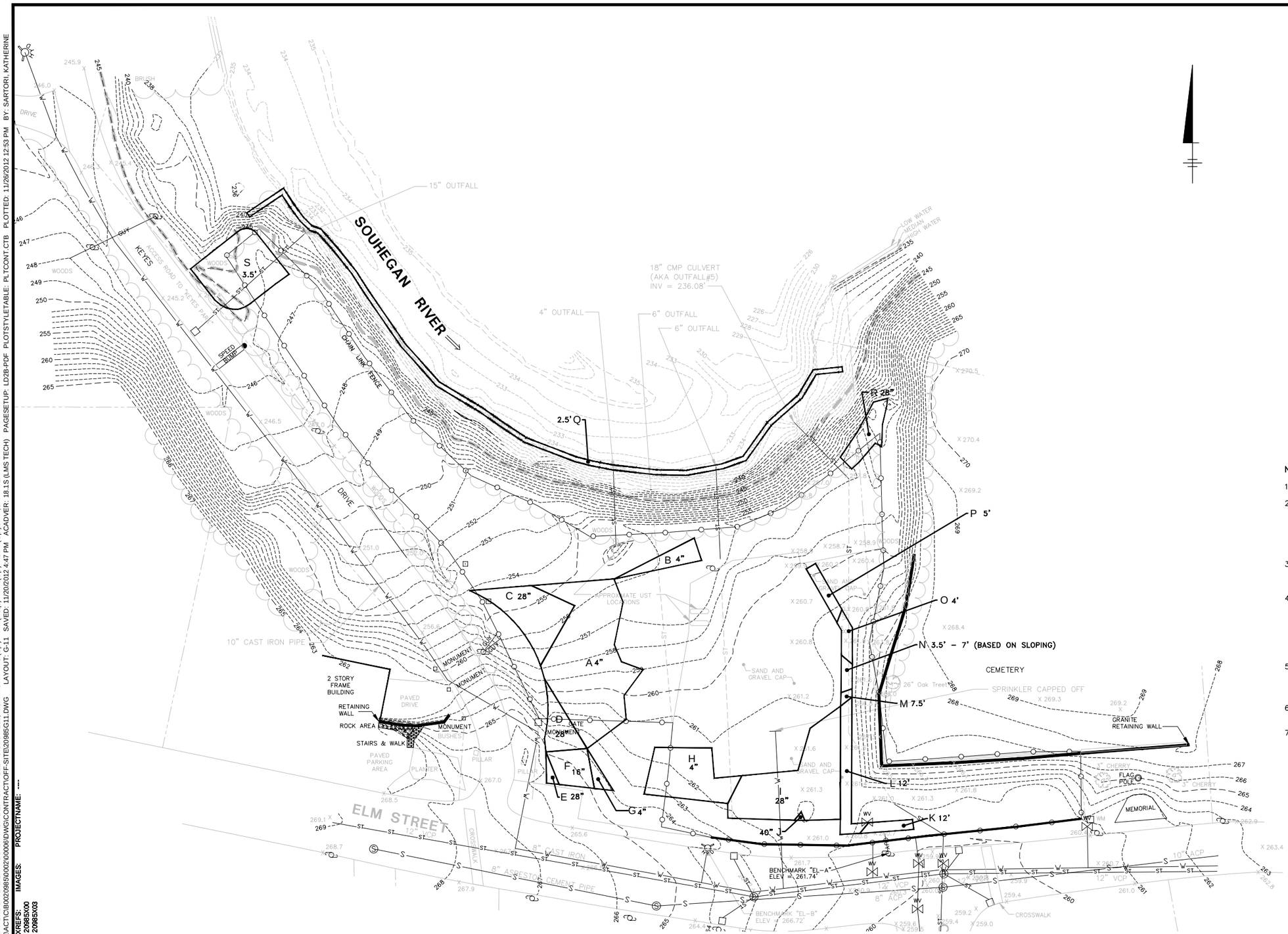
ARCADIS
ARCADIS U.S., INC.

GENERAL ELECTRIC COMPANY
FLETCHER'S PAINT WORKS AND STORAGE FACILITY SUPERFUND SITE
MILFORD, NEW HAMPSHIRE
FINAL (100%) DESIGN REPORT

SOIL REMOVAL LIMITS (TO ACHIEVE NON-CORRIDOR SCLs) - ELM STREET AREA

ARCADIS Project No. B0020985.0002.00006
Date NOVEMBER 2012
ARCADIS OF NEW YORK
6723 TOWPATH ROAD
P.O. BOX 66
SYRACUSE, NEW YORK
TEL. 315.446.9120

G-10



LEGEND:

- UTILITY POLE
- CATCH BASIN
- SANITARY MANHOLE
- STORM MANHOLE
- WATER VALVE
- WATER METER
- TELEPHONE JACK
- 260 — INDEX SURFACE ELEVATION CONTOUR
- 259 — INTERMEDIATE SURFACE ELEVATION CONTOUR
- CHAIN LINK FENCE
- FIRE HYDRANT
- APPROXIMATE ELEVATION OF 100-YEAR FLOOD PLAIN
- EXCAVATION LIMITS
- 4' — DEPTH OF EXCAVATION (AS MEASURED FROM GROUND SURFACE EXCAVATION OR BOTTOM OF SAND CAP WHERE PRESENT) (SEE NOTES 2 AND 3)
- A — EXCAVATION ID

NOTES:

1. SEE DRAWING G-12 FOR FINAL EXCAVATION LIMITS.
2. A SACRIFICIAL GEOTEXTILE LAYER AND A SAND CAP EXISTS OVER A MAJORITY OF THE SITE. CONTRACTOR SHALL REMOVE SAND CAP (TO WITHIN 3-INCHES OF THE GEOTEXTILE) AND STOCKPILE SAND ON-SITE FOR CONFIRMATION SOIL SAMPLING AND USE AS BACKFILL. THE THICKNESS OF THE SAND CAP VARIES ACROSS THE SITE AND IS DISCUSSED ON FIGURE 9 OF THE FINAL (100%) DESIGN REPORT.
3. EXCAVATION CELLS WITH NO ELEVATION REFERENCE SHALL BE EXCAVATED TO THE DESIGNATED DEPTH AS MEASURED FROM GROUND SURFACE OR THE GEOTEXTILE LAYER (IF WITHIN THE SAND CAP).
4. IN CERTAIN AREAS OF THE SITE, OVEREXCAVATION WILL BE REQUIRED TO INSTALL THE PROPOSED COVER SYSTEM, REPLACEMENT STORM SEWER, STORMWATER RETENTION AREA AND GABION WALL. IN SUCH INSTANCES, MATERIAL EXCAVATED BEYOND THAT REQUIRED TO MEET THE SOIL CLEANUP LEVELS MUST BE USED AS BACKFILL FOR DEEPER EXCAVATIONS THAT ARE IN THE COVER (I.E., NOT UNDER UTILITY CORRIDORS, TREE PLANTING AREAS AND RIPRAP SLOPES).
5. ADDITIONAL EXCAVATION FOR CELLS K, L, M, N, O, AND P SHALL BE PERFORMED IN ACCORDANCE WITH TECHNICAL DRAWING G-20 AND AS REQUIRED TO INSTALL PIPE BEDDING MATERIALS AND ACHIEVE THE SPECIFIED PIPE INVERT ELEVATIONS.
6. FOR CLARITY, NOT ALL EXISTING FEATURES ARE SHOWN. SEE DRAWING G-2 FOR ALL EXISTING FEATURES AND CONDITIONS.
7. SEE S-SERIES DRAWINGS FOR SLOPING AND EXCAVATION SUPPORT REQUIREMENTS.

CITY: SYRACUSE-NY DIV/GROUP: 141/ENV DB: DMW GMS LJP B.PITTSLEY G.STOWELL, K.SARTORI PIC:(Opt) PM:(Reqd) TM:(Opt) LYR:(Opt)ON=*;OFF=*REF
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XREFS: 20985X00 20985X03 IMAGES: PROJECTNAME: ----

30' 0 30' 60'
1"=30'

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Professional Engineer's Name: LOWELL W. McBURNEY
Professional Engineer's No.: 10767
State: NH | Date Signed: | Project Mgr.: CRA
Designed by: MAM | Drawn by: . | Checked by: LAF

DRAFT FOR EPA REVIEW

ARCADIS
ARCADIS U.S., INC.

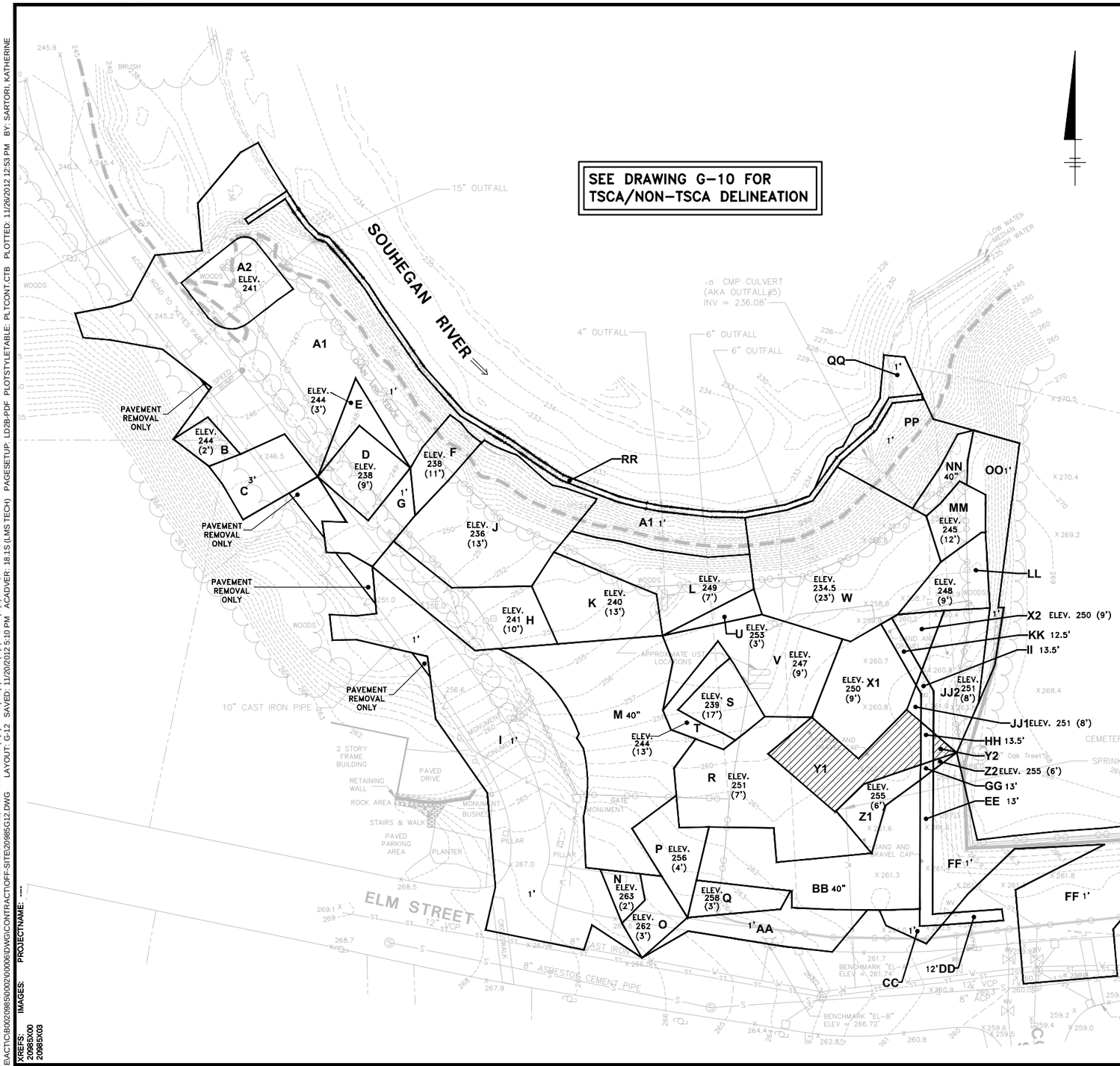
GENERAL ELECTRIC COMPANY
FLETCHER'S PAINT WORKS AND STORAGE FACILITY SUPERFUND SITE
MILFORD, NEW HAMPSHIRE
FINAL (100%) DESIGN REPORT

ADDITIONAL SOIL REMOVAL BEYOND THAT REQUIRED TO ACHIEVE SCLs - ELM STREET AREA

ARCADIS Project No. B0020985.0002.00006
Date NOVEMBER 2012

ARCADIS OF NEW YORK
6723 TOWPATH ROAD
P.O. BOX 66
SYRACUSE, NEW YORK
TEL. 315.446.9120

G-11



LEGEND:

- INDEX SURFACE ELEVATION CONTOUR
- INTERMEDIATE SURFACE ELEVATION CONTOUR
- CHAIN LINK FENCE
- JERSEY WALL BARRIER WITH CHAIN LINK FENCE
- EXISTING STORM SEWER
- EXISTING WATER LINE
- EXISTING SANITARY SEWER
- INFERRED UTILITY LOCATIONS
- APPROXIMATE ELEVATION OF 100-YEAR FLOOD PLAIN (245)
- EDGE OF PAVEMENT
- PROPERTY LINE
- RIGHT-OF-WAY
- EXISTING EDGE OF WATER
- EXCAVATION LIMITS
- ELEV. 245 (12') — BOTTOM OF EXCAVATION ELEVATION (DEPTH SHOWN IN PARENTHESES REPRESENTS APPROXIMATE DEPTH OF SAMPLE(S) REQUIRING REMOVAL AND IS PROVIDED FOR INFORMATIONAL PURPOSES ONLY)
- 40" — DEPTH OF EXCAVATION (AS MEASURED FROM GROUND SURFACE EXCAVATION OR BOTTOM OF SAND CAP WHERE PRESENT)(SEE NOTES 18 AND 19)
- NN — EXCAVATION ID
- UTILITY POLE
- CATCH BASIN
- SANITARY MANHOLE
- STORM MANHOLE
- WATER VALVE
- WATER METER
- TELEPHONE JACK
- FIRE HYDRANT
- ACP — ASBESTOS CONCRETE PIPE
- VCP — VITRIFIED CLAY PIPE
- EXCAVATION IN THIS AREA TO BE SLOPED FROM CELLS R, Z1, AND Z2 TO CELLS X1, JJ1, AND JJ2

NOTES:

1. REFER TO DRAWINGS G-1, G-2, AND G-32 FOR GENERAL NOTES PERTAINING TO BASE MAPPING, CONTRACT REQUIREMENTS, AND SITE INFORMATION.
2. LOCATIONS OF EXISTING STRUCTURES AND EXCAVATION AREAS ARE APPROXIMATE. CONTRACTOR SHALL FIELD VERIFY ALL LOCATIONS PRIOR TO CONSTRUCTION ACTIVITIES.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR IDENTIFYING, PROTECTING, AND RELOCATING (AS NECESSARY) ALL UTILITIES (OVERHEAD AND UNDERGROUND) THAT MAY BE IMPACTED BY CONSTRUCTION ACTIVITIES.
4. THE CONTRACTOR SHALL CONTROL DUST, VAPORS, AND ODORS THAT RESULT FROM THE REMEDIAL ACTIVITIES TO MEET ESTABLISHED AMBIENT STANDARDS.
5. THE CONTRACTOR SHALL UTILIZE DRY SOILS EXCAVATED FROM ABOVE THE WATER TABLE TO AUGMENT WET SOIL EXCAVATED FROM BELOW THE WATER TABLE. THE TEMPORARY STAGING, MIXING, AND DEWATERING AREAS MUST BE CONSTRUCTED AND MANAGED IN ACCORDANCE WITH DETAIL 4 ON DRAWING G-25.
6. SILT FENCING AND OTHER SEDIMENT AND EROSION CONTROL MEASURES SHALL BE ESTABLISHED AND MAINTAINED BY THE CONTRACTOR AS REQUIRED OR SPECIFIED.
7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR SEGREGATING EXCAVATED TSCA AND NON-TSCA MATERIAL AS SHOWN ON DRAWING G-10. EXCAVATED SOILS CONTAINING TOTAL PCBS AT CONCENTRATIONS GREATER THAN OR EQUAL TO 50 mg/Kg SHALL BE HANDLED AS TSCA MATERIAL, AND DISPOSED OF AT AN OFF-SITE DISPOSAL FACILITY PERMITTED TO RECEIVE TSCA WASTE (E.G., WMI – MODEL CITY, NY). EXCAVATED SOILS CONTAINING TOTAL PCBS AT CONCENTRATIONS LESS THAN 50 mg/Kg MAY BE HANDLED AS NON-TSCA MATERIAL, AND DISPOSED OF AT AN OFF-SITE DISPOSAL FACILITY PERMITTED TO RECEIVE NON-HAZARDOUS WASTE (E.G., WMI – ROCHESTER, NH). ALL DISPOSAL FACILITIES MUST BE APPROVED BY GE AND EPA PRIOR TO SHIPMENT. IN ADDITION, ALL EXCAVATED MATERIAL SHALL BE PROCESSED/REDUCED IN SIZE, AS NECESSARY, TO FACILITATE PLACEMENT INTO TRANSPORTATION CONTAINERS AND TO MEET THE APPROPRIATE SIZING REQUIREMENTS AS DIRECTED BY THE RESPECTIVE DISPOSAL FACILITIES. FURTHERMORE, UNLESS DIRECT LOADED, EXCAVATED MATERIAL SHALL BE STAGED IN A LINED TEMPORARY STAGING AREA TO FACILITATE MATERIAL MIXING AND DEWATERING, AS NECESSARY TO CONDITION THE MATERIAL FOR OFF-SITE TRANSPORTATION AND DISPOSAL (REFER TO DETAIL 4 ON DRAWING G-25).
8. WATER GENERATED DURING EXCAVATION ACTIVITIES INCLUDING, BUT NOT LIMITED TO, THE DEWATERING OF EXCAVATIONS, DEWATERING OF SOILS, AND DECONTAMINATION FLUIDS, SHALL BE COLLECTED, TRANPORTED/PUMPED TO THE TEMPORARY WATER TREATMENT FACILITY FOR TREATMENT PRIOR TO DISCHARGE.
9. THE HORIZONTAL LIMITS OF EXCAVATION ACTIVITIES WILL BE PHYSICALLY DELINEATED IN THE FIELD BY THE CONTRACTOR. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE LAYOUT OF SURVEY CONTROLS, GRID COORDINATE LOCATIONS, LINES, GRADES, AND ELEVATIONS NECESSARY TO VERIFY ELEVATION DEPTHS AND HORIZONTAL LIMITS.
10. REFER TO S-SERIES DRAWINGS FOR INFORMATION REGARDING EXCAVATION SUPPORT AND SLOPING.
11. THE CONTRACTOR MUST MANAGE ALL RAINWATER THAT ENTERS AN IMPACTED EXCAVATION OR IMPACTED SOIL MANAGEMENT AREA AS IF IT IS IMPACTED WATER.
12. CONTRACTOR SHALL REMOVE USTs BEFORE OR DURING EXCAVATION ACTIVITIES. CONTRACTOR SHALL COLLECT, CONTAINERIZE, CHARACTERIZE AND PROPERLY DISPOSE OF ANY MATERIAL (INCLUDING SOIL) WITHIN THE TANKS.
13. CONTRACTOR SHALL NOT BE ALLOWED TO EXCAVATE WITHIN ELM STREET (I.E., PARTIALLY CLOSE ELM STREET) WHEN ANY PORTION OF MILL STREET IS CLOSED.
14. EXISTING SPRINKLER LINE TO BE CUT AND CAPPED AT SOUTHERN EDGE OF EXCAVATION.
15. EXISTING PIPES LOCATED IN THE CENTER OF THE SITE AND HAVING OUTFALLS ALONG THE RIVER BANK, SHALL BE CUT AND PLUGGED (IF ENCOUNTERED) AND THE DOWNGRADIENT PORTION FILLED WITH FLOWABLE FILL, OR REMOVED.
16. IN CERTAIN AREAS OF THE SITE, OVEREXCAVATION WILL BE REQUIRED TO INSTALL THE PROPOSED COVER SYSTEM, REPLACEMENT STORM SEWER, STORMWATER RETENTION AREA, AND GABION WALL. IN SUCH INSTANCES, MATERIAL EXCAVATED BEYOND THAT REQUIRED TO MEET THE SOIL CLEANUP LEVELS MUST BE USED AS BACKFILL FOR DEEPER EXCAVATIONS THAT ARE IN THE COVER (I.E., NOT IN UTILITY CORRIDORS, TREE PLANTING AREAS AND RIPRAP SLOPES).
17. ADDITIONAL EXCAVATION FOR CELLS DD, EE, GG, HH, II, AND KK SHALL BE PERFORMED IN ACCORDANCE WITH TECHNICAL DRAWING G-20 AND AS REQUIRED TO INSTALL PIPE BEDDING MATERIALS AND ACHIEVE THE SPECIFIED PIPE INVERT ELEVATIONS.
18. A SACRIFICIAL GEOTEXTILE LAYER AND A SAND CAP EXISTS OVER A MAJORITY OF THE SITE. CONTRACTOR SHALL REMOVE SAND CAP (TO WITHIN 3-INCHES OF THE GEOTEXTILE) AND STOCKPILE SAND ON-SITE FOR CONFIRMATION SOIL SAMPLING AND USE AS BACKFILL. THE THICKNESS OF THE SAND CAP VARIES ACROSS THE SITE AND IS DISCUSSED ON FIGURE 9 OF THE FINAL (100%) DESIGN REPORT.
19. EXCAVATION CELLS WITH NO ELEVATION REFERENCE SHALL BE EXCAVATED TO THE DESIGNATED DEPTH AS MEASURED FROM GROUND SURFACE OR THE GEOTEXTILE LAYER (IF WITHIN THE SAND CAP).
20. THE CONTRACTOR SHALL LOAD EXCAVATED MATERIALS INTO TRANSPORTATION VEHICLES DIRECTLY, IF POSSIBLE. TEMPORARY STOCKPILES, IF USED, SHALL BE LOCATED OVER SOILS SUBJECT TO FUTURE EXCAVATION OR IN LINED, BERMED AREAS. TEMPORARY STOCKPILES MUST BE COVERED WITH PROPERLY ANCHORED TARPS WHEN STOCKPILE OPERATIONS ARE NOT ONGOING.
21. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATION WITH GE'S TRANSPORTATION AND DISPOSAL CONTRACTOR FOR TRANSPORTATION VEHICLES AND WILL BE RESPONSIBLE FOR THE PREPARATION OF WASTE PROFILES, HAZARDOUS WASTE MANIFESTS, AND BILLS OF LADING FOR ALL MATERIALS TO BE TRANSPORTED FOR OFF-SITE DISPOSAL. CONTRACTOR SHALL BE RESPONSIBLE FOR LOADING MATERIALS FOR OFF-SITE TRANSPORTATION AND PLACARDING TRANSPORTATION VEHICLES IN ACCORDANCE WITH APPLICABLE REGULATIONS. ALL TRANSPORTATION VEHICLES USED TO TRANSPORT IMPACTED MATERIALS OFF-SITE SHALL BE COVERED WITH TARPS PRIOR TO OFF-SITE TRANSPORT.
22. FOR CLEAN BACKFILL STAGING AREA(S), THE CONTRACTOR SHALL PLACE GRAVEL AND A GEOTEXTILE PRIOR TO THE PLACEMENT OF MATERIALS IN THE STAGING AREA(S) (REFER TO DETAIL 5 ON DRAWING G-25). THE CONTRACTOR SHALL PLACE AN IMPERMEABLE COVER OVER THE MATERIALS IN THE STAGING AREA(S) TO LIMIT EXPOSURE TO WIND AND PRECIPITATION. THE IMPERMEABLE COVER SHALL BE ANCHORED BY THE CONTRACTOR, AS NECESSARY, TO RESIST WIND FORCES AND SHALL BE INSTALLED TO MINIMIZE PONDING OF PRECIPITATION. THE CONTRACTOR SHALL NOT BE PERMITTED TO UTILIZE SOIL, DEBRIS, EXCAVATED SOIL, OR OTHER MATERIALS AS ANCHORING MATERIALS THAT COULD CREATE POTENTIAL SEDIMENTATION AND EROSION IMPACTS TO STORM WATER RUN-OFF.

CITY: SYRACUSE-NY DIV/GROUP: 141/ENV DB: DMW GMS LJP B.PITTSLEY G.STOWELL, K.SARTORI PIC:(Opt) PM:(Reqd) TM:(Opt) LYR:(Opt)ON=*;OFF=*REF
V:\ENVCAD\SYRACUSE\ACT\B0020985\0002\00006\DWG\CONTRACT\OFF-SITE\20985G12.DWG LAYOUT: G-12 SAVED: 11/20/2012 5:10 PM ACADVER: 18.1S (LMS TECH) PAGESETUP: LD2B-PDF PLOTSTYLETABLE: PLTCONT.CTB PLOTTED: 11/26/2012 12:53 PM BY: SARTORI, KATHERINE
XREFS: 20985X00 20985X03 IMAGES: PROJECTNAME: ---

1"=30' 30' 0 30' 60'

THIS BAR REPRESENTS ONE INCH ON THE ORIGINAL DRAWING: USE TO VERIFY FIGURE REPRODUCTION SCALE

No.	Date	Revisions	By	Ckd

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Professional Engineer's Name: LOWELL W. McBURNEY
Professional Engineer's No.: 10767

State	Date Signed	Project Mgr.
NH		CRA
Designed by MAM	Drawn by .	Checked by LAF

DRAFT FOR EPA REVIEW

ARCADIS U.S., INC.

GENERAL ELECTRIC COMPANY
FLETCHER'S PAINT WORKS AND STORAGE FACILITY SUPERFUND SITE
MILFORD, NEW HAMPSHIRE
FINAL (100%) DESIGN REPORT

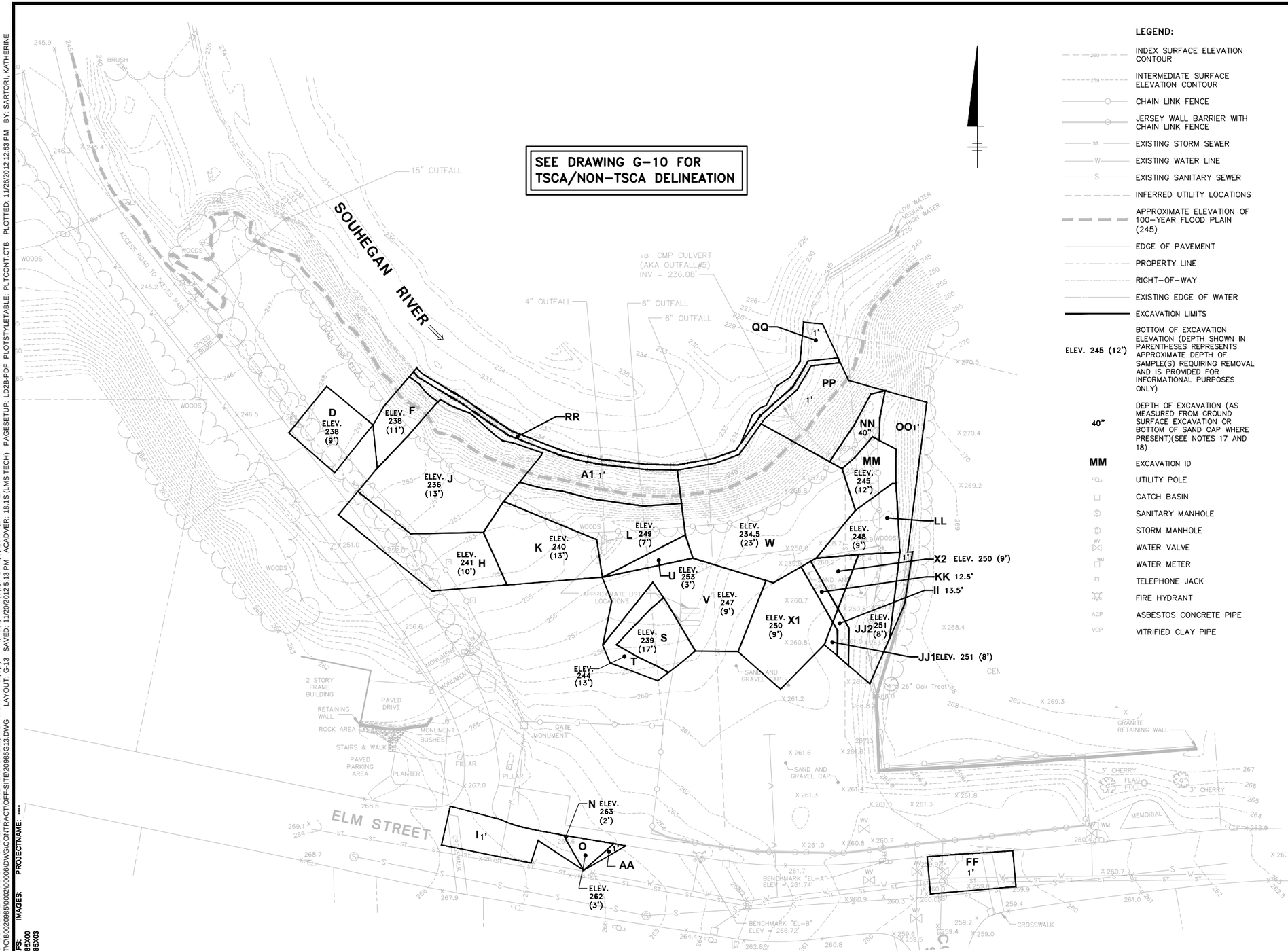
FINAL SOIL REMOVAL LIMITS - ELM STREET AREA

ARCADIS Project No. B0020985.0002.00006

Date NOVEMBER 2012

ARCADIS OF NEW YORK
6723 TOWPATH ROAD
P.O. BOX 66
SYRACUSE, NEW YORK
TEL. 315.446.9120

G-12



LEGEND:

- INDEX SURFACE ELEVATION CONTOUR
- INTERMEDIATE SURFACE ELEVATION CONTOUR
- CHAIN LINK FENCE
- JERSEY WALL BARRIER WITH CHAIN LINK FENCE
- EXISTING STORM SEWER
- EXISTING WATER LINE
- EXISTING SANITARY SEWER
- INFERRED UTILITY LOCATIONS
- APPROXIMATE ELEVATION OF 100-YEAR FLOOD PLAIN (245)
- EDGE OF PAVEMENT
- PROPERTY LINE
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- EXISTING EDGE OF WATER
- EXCAVATION LIMITS
- ELEV. 245 (12') — BOTTOM OF EXCAVATION ELEVATION (DEPTH SHOWN IN PARENTHESES REPRESENTS APPROXIMATE DEPTH OF SAMPLE(S) REQUIRING REMOVAL AND IS PROVIDED FOR INFORMATIONAL PURPOSES ONLY)
- 40" — DEPTH OF EXCAVATION (AS MEASURED FROM GROUND SURFACE EXCAVATION OR BOTTOM OF SAND CAP WHERE PRESENT)(SEE NOTES 17 AND 18)
- MM — EXCAVATION ID
- UTILITY POLE
- CATCH BASIN
- SANITARY MANHOLE
- STORM MANHOLE
- WATER VALVE
- WATER METER
- TELEPHONE JACK
- FIRE HYDRANT
- ACP — ASBESTOS CONCRETE PIPE
- VCP — VITRIFIED CLAY PIPE

NOTES:

1. REFER TO DRAWINGS G-1, G-2, AND G-32 FOR GENERAL NOTES PERTAINING TO BASE MAPPING, CONTRACT REQUIREMENTS, AND SITE INFORMATION.
2. LOCATIONS OF EXISTING STRUCTURES AND EXCAVATION AREAS ARE APPROXIMATE. CONTRACTOR SHALL FIELD VERIFY ALL LOCATIONS PRIOR TO CONSTRUCTION ACTIVITIES.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR IDENTIFYING, PROTECTING, AND RELOCATING (AS NECESSARY) ALL UTILITIES (OVERHEAD AND UNDERGROUND) THAT MAY BE IMPACTED BY CONSTRUCTION ACTIVITIES.
4. THE CONTRACTOR SHALL CONTROL DUST, VAPORS, AND ODORS THAT RESULT FROM THE REMEDIAL ACTIVITIES TO MEET ESTABLISHED AMBIENT STANDARDS.
5. THE CONTRACTOR SHALL UTILIZE DRY SOILS EXCAVATED FROM ABOVE THE WATER TABLE TO AUGMENT WET SOIL EXCAVATED FROM BELOW THE WATER TABLE. THE TEMPORARY STAGING, MIXING, AND DEWATERING AREAS MUST BE CONSTRUCTED AND MANAGED IN ACCORDANCE WITH DETAIL 4 ON DRAWING G-25.
6. SILT FENCING AND OTHER SEDIMENT AND EROSION CONTROL MEASURES SHALL BE ESTABLISHED AND MAINTAINED BY THE CONTRACTOR AS REQUIRED OR SPECIFIED.
7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR SEGREGATING EXCAVATED TSCA AND NON-TSCA MATERIAL AS SHOWN ON DRAWING G-10. EXCAVATED SOILS CONTAINING TOTAL PCBS AT CONCENTRATIONS GREATER THAN OR EQUAL TO 50 mg/Kg SHALL BE HANDLED AS TSCA MATERIAL, AND DISPOSED OF AT AN OFF-SITE DISPOSAL FACILITY PERMITTED TO RECEIVE TSCA WASTE (E.G., WMI – MODEL CITY, NY). EXCAVATED SOILS CONTAINING TOTAL PCBS AT CONCENTRATIONS LESS THAN 50 mg/Kg MAY BE HANDLED AS NON-TSCA MATERIAL, AND DISPOSED OF AT AN OFF-SITE DISPOSAL FACILITY PERMITTED TO RECEIVE NON-HAZARDOUS WASTE (E.G., WMI – ROCHESTER, NH). ALL DISPOSAL FACILITIES MUST BE APPROVED BY GE AND EPA PRIOR TO SHIPMENT. IN ADDITION, ALL EXCAVATED MATERIAL SHALL BE PROCESSED/REDUCED IN SIZE, AS NECESSARY, TO FACILITATE PLACEMENT INTO TRANSPORTATION CONTAINERS AND TO MEET THE APPROPRIATE SIZING REQUIREMENTS AS DIRECTED BY THE RESPECTIVE DISPOSAL FACILITIES. FURTHERMORE, UNLESS DIRECT LOADED, EXCAVATED MATERIAL SHALL BE STAGED IN A LINED TEMPORARY STAGING AREA TO FACILITATE MATERIAL MIXING AND DEWATERING, AS NECESSARY TO CONDITION THE MATERIAL FOR OFF-SITE TRANSPORTATION AND DISPOSAL (REFER TO DETAIL 4 ON DRAWING G-25).
8. WATER GENERATED DURING EXCAVATION ACTIVITIES INCLUDING, BUT NOT LIMITED TO, THE DEWATERING OF EXCAVATIONS, DEWATERING OF SOILS, AND DECONTAMINATION FLUIDS, SHALL BE COLLECTED, TRANPORTED/PUMPED TO THE TEMPORARY WATER TREATMENT FACILITY FOR TREATMENT PRIOR TO DISCHARGE.
9. THE HORIZONTAL LIMITS OF EXCAVATION ACTIVITIES WILL BE PHYSICALLY DELINEATED IN THE FIELD BY THE CONTRACTOR. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE LAYOUT OF SURVEY CONTROLS, GRID COORDINATE LOCATIONS, LINES, GRADES, AND ELEVATIONS NECESSARY TO VERIFY ELEVATION DEPTHS AND HORIZONTAL LIMITS.
10. REFER TO S-SERIES DRAWINGS FOR INFORMATION REGARDING EXCAVATION SUPPORT AND SLOPING.
11. THE CONTRACTOR MUST MANAGE ALL RAINWATER THAT ENTERS AN IMPACTED EXCAVATION OR IMPACTED SOIL MANAGEMENT AREA AS IF IT IS IMPACTED WATER.
12. CONTRACTOR SHALL REMOVE USTs BEFORE OR DURING EXCAVATION ACTIVITIES. CONTRACTOR SHALL COLLECT, CONTAINERIZE, CHARACTERIZE AND PROPERLY DISPOSE OF ANY MATERIAL (INCLUDING SOIL) WITHIN THE TANKS.
13. CONTRACTOR SHALL NOT BE ALLOWED TO EXCAVATE WITHIN ELM STREET (I.E., PARTIALLY CLOSE ELM STREET) WHEN ANY PORTION OF MILL STREET IS CLOSED.
14. EXISTING PIPES LOCATED IN THE CENTER OF THE SITE AND HAVING OUTFALLS ALONG THE RIVER BANK, SHALL BE CUT AND PLUGGED (IF ENCOUNTERED) AND THE DOWNGRADIENT PORTION FILLED WITH FLOWABLE FILL, OR REMOVED.
15. IN CERTAIN AREAS OF THE SITE, OVEREXCAVATION WILL BE REQUIRED TO INSTALL THE PROPOSED COVER SYSTEM, REPLACEMENT STORM SEWER, STORMWATER RETENTION AREA, AND GABION WALL. IN SUCH INSTANCES, MATERIAL EXCAVATED BEYOND THAT REQUIRED TO MEET THE SOIL CLEANUP LEVELS MUST BE USED AS BACKFILL FOR DEEPER EXCAVATIONS THAT ARE IN THE COVER (I.E., NOT IN UTILITY CORRIDORS, TREE PLANTING AREAS AND RIPRAP SLOPES).
16. ADDITIONAL EXCAVATION FOR CELLS II AND KK SHALL BE PERFORMED IN ACCORDANCE WITH TECHNICAL DRAWING G-20 AND AS REQUIRED TO INSTALL PIPE BEDDING MATERIALS AND ACHIEVE THE SPECIFIED PIPE INVERT ELEVATIONS.
17. A SACRIFICIAL GEOTEXTILE LAYER AND A SAND CAP EXISTS OVER A MAJORITY OF THE SITE. CONTRACTOR SHALL REMOVE SAND CAP (TO WITHIN 3-INCHES OF THE GEOTEXTILE) AND STOCKPILE SAND ON-SITE FOR CONFIRMATION SOIL SAMPLING AND USE AS BACKFILL. THE THICKNESS OF THE SAND CAP VARIES ACROSS THE SITE AND IS DISCUSSED ON FIGURE 9 OF THE FINAL (100%) DESIGN REPORT.
18. EXCAVATION CELLS WITH NO ELEVATION REFERENCE SHALL BE EXCAVATED TO THE DESIGNATED DEPTH AS MEASURED FROM GROUND SURFACE OR THE GEOTEXTILE LAYER (IF WITHIN THE SAND CAP).
19. THE CONTRACTOR SHALL LOAD EXCAVATED MATERIALS INTO TRANSPORTATION VEHICLES DIRECTLY, IF POSSIBLE. TEMPORARY STOCKPILES, IF USED, SHALL BE LOCATED OVER SOILS SUBJECT TO FUTURE EXCAVATION OR IN LINED, BERMED AREAS. TEMPORARY STOCKPILES MUST BE COVERED WITH PROPERLY ANCHORED TARPS WHEN STOCKPILE OPERATIONS ARE NOT ONGOING.
20. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATION WITH GE'S TRANSPORTATION AND DISPOSAL CONTRACTOR FOR TRANSPORTATION VEHICLES AND WILL BE RESPONSIBLE FOR THE PREPARATION OF WASTE PROFILES, HAZARDOUS WASTE MANIFESTS, AND BILLS OF LADING FOR ALL MATERIALS TO BE TRANSPORTED FOR OFF-SITE DISPOSAL. CONTRACTOR SHALL BE RESPONSIBLE FOR LOADING MATERIALS FOR OFF-SITE TRANSPORTATION AND PLACARDING TRANSPORTATION VEHICLES IN ACCORDANCE WITH APPLICABLE REGULATIONS. ALL TRANSPORTATION VEHICLES USED TO TRANSPORT IMPACTED MATERIALS OFF-SITE SHALL BE COVERED WITH TARPS PRIOR TO OFF-SITE TRANSPORT.
21. FOR CLEAN BACKFILL STAGING AREA(S), THE CONTRACTOR SHALL PLACE GRAVEL AND A GEOTEXTILE PRIOR TO THE PLACEMENT OF MATERIALS IN THE STAGING AREA(S) (REFER TO DETAIL 5 ON DRAWING G-25). THE CONTRACTOR SHALL PLACE AN IMPERMEABLE COVER OVER THE MATERIALS IN THE STAGING AREA(S) TO LIMIT EXPOSURE TO WIND AND PRECIPITATION. THE IMPERMEABLE COVER SHALL BE ANCHORED BY THE CONTRACTOR, AS NECESSARY, TO RESIST WIND FORCES AND SHALL BE INSTALLED TO MINIMIZE PONDING OF PRECIPITATION. THE CONTRACTOR SHALL NOT BE PERMITTED TO UTILIZE SOIL, DEBRIS, EXCAVATED SOIL, OR OTHER MATERIALS AS ANCHORING MATERIALS THAT COULD CREATE POTENTIAL SEDIMENTATION AND EROSION IMPACTS TO STORM WATER RUN-OFF.

CITY: SYRACUSE-NY DIV/GROUP: 141/ENV DB: DMW GMS LJP B.PITTSLEY G.STOWELL, K.SARTORI PIC:(Opt) PM:(Reqd) TM:(Opt) LYR:(Opt)ON=*;OFF=*REF
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XREFS: 20985X00 20985X03 IMAGES: PROJECTNAME: ----

1"=30' 30' 0 30' 60'

THIS BAR REPRESENTS ONE INCH ON THE ORIGINAL DRAWING: USE TO VERIFY FIGURE REPRODUCTION SCALE

No.	Date	Revisions	By	Ckd

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Professional Engineer's Name: LOWELL W. McBURNEY
Professional Engineer's No.: 10767
State: NH | Date Signed: | Project Mgr.: CRA
Designed by: MAM | Drawn by: . | Checked by: LAF

DRAFT FOR EPA REVIEW

ARCADIS
ARCADIS U.S., INC.

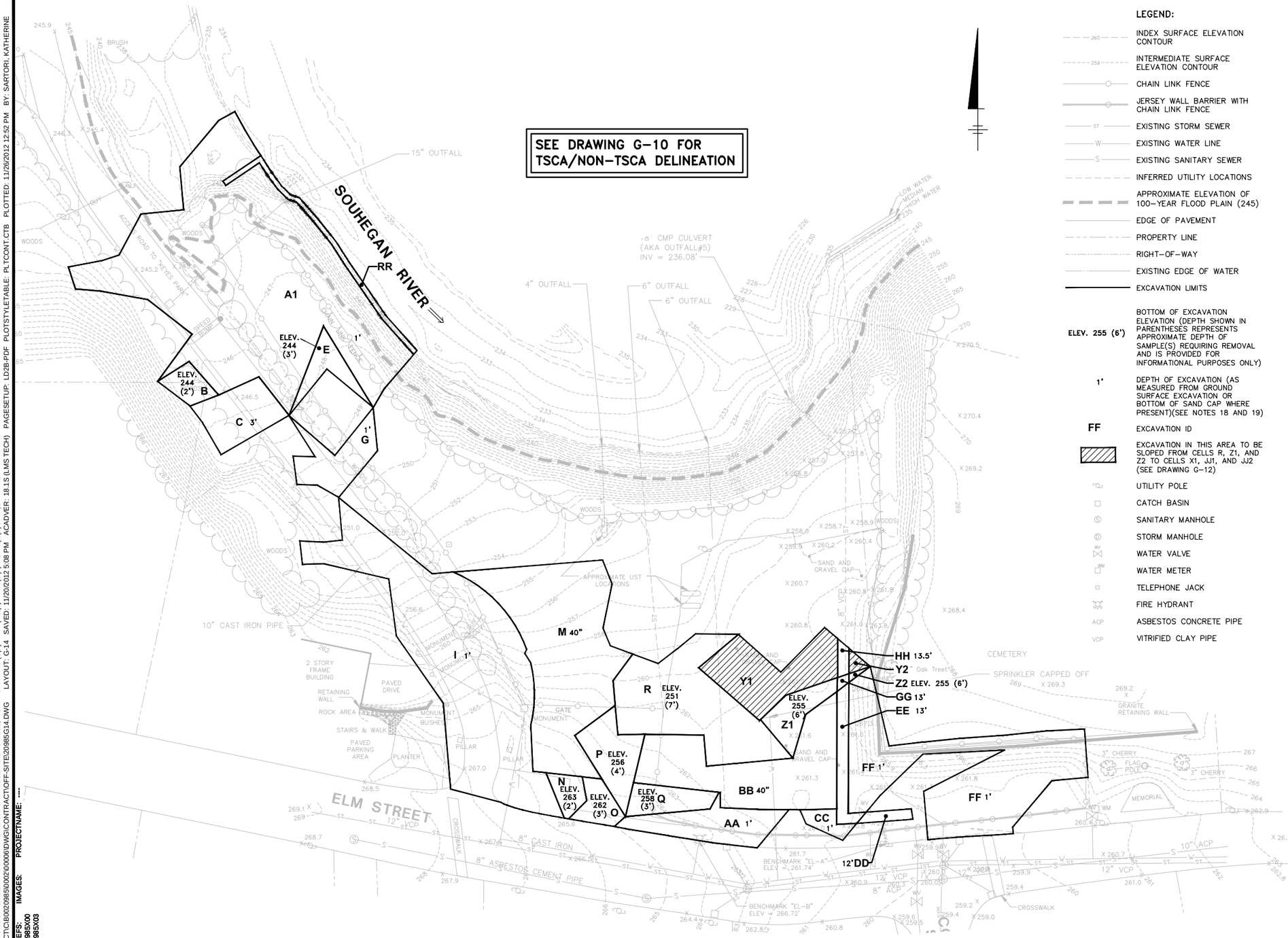
GENERAL ELECTRIC COMPANY
FLETCHER'S PAINT WORKS AND STORAGE FACILITY SUPERFUND SITE
MILFORD, NEW HAMPSHIRE
FINAL (100%) DESIGN REPORT

PHASE 1 SOIL REMOVAL AREAS - ELM STREET AREA

ARCADIS Project No. B00209850.0002.00006
Date NOVEMBER 2012

ARCADIS OF NEW YORK
6723 TOWPATH ROAD
P.O. BOX 66
SYRACUSE, NEW YORK
TEL. 315.446.9120

G-13



LEGEND:

- INDEX SURFACE ELEVATION CONTOUR
- INTERMEDIATE SURFACE ELEVATION CONTOUR
- CHAIN LINK FENCE
- JERSEY WALL BARRIER WITH CHAIN LINK FENCE
- EXISTING STORM SEWER
- EXISTING WATER LINE
- EXISTING SANITARY SEWER
- INFERRED UTILITY LOCATIONS
- APPROXIMATE ELEVATION OF 100-YEAR FLOOD PLAIN (245)
- EDGE OF PAVEMENT
- PROPERTY LINE
- RIGHT-OF-WAY
- EXISTING EDGE OF WATER
- EXCAVATION LIMITS
- ELEV. 255 (6') — BOTTOM OF EXCAVATION ELEVATION (DEPTH SHOWN IN PARENTHESES REPRESENTS APPROXIMATE DEPTH OF SAMPLE(S) REQUIRING REMOVAL AND IS PROVIDED FOR INFORMATIONAL PURPOSES ONLY)
- 1' — DEPTH OF EXCAVATION (AS MEASURED FROM GROUND SURFACE EXCAVATION OR BOTTOM OF SAND CAP WHERE PRESENT)(SEE NOTES 18 AND 19)
- FF — EXCAVATION ID
- EXCAVATION IN THIS AREA TO BE SLOPED FROM CELLS R, Z1, AND Z2 TO CELLS X1, JJ1, AND JJ2 (SEE DRAWING G-12)
- UTILITY POLE
- CATCH BASIN
- SANITARY MANHOLE
- STORM MANHOLE
- WATER VALVE
- WATER METER
- TELEPHONE JACK
- FIRE HYDRANT
- ACP — ASBESTOS CONCRETE PIPE
- VCP — VITRIFIED CLAY PIPE

NOTES:

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6. SILT FENCING AND OTHER SEDIMENT AND EROSION CONTROL MEASURES SHALL BE ESTABLISHED AND MAINTAINED BY THE CONTRACTOR AS REQUIRED OR SPECIFIED.
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14. EXISTING SPRINKLER LINE TO BE CUT AND CAPPED AT SOUTHERN EDGE OF EXCAVATION.
15. EXISTING PIPES LOCATED IN THE CENTER OF THE SITE AND HAVING OUTFALLS ALONG THE RIVER BANK, SHALL BE CUT AND PLUGGED (IF ENCOUNTERED) AND THE DOWNGRADIENT PORTION FILLED WITH FLOWABLE FILL, OR REMOVED.
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17. ADDITIONAL EXCAVATION FOR CELLS DD, EE, GG, AND HH SHALL BE PERFORMED IN ACCORDANCE WITH TECHNICAL DRAWING G-20 AND AS REQUIRED TO INSTALL PIPE BEDDING MATERIALS AND ACHIEVE THE SPECIFIED PIPE INVERT ELEVATIONS.
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CITY: SYRACUSE-NY DV/GROUP: 141/ENV DB: DMW GMS LJP B.PITTSLEY G.STOWELL, K.SARTORI PIC:(Opt) PM:(Reqd) TM:(Opt) LYR:(Opt)ON=*;OFF=*REF
V:\ENVCAD\SYRACUSE\ACT\CB0020985\0002\00006\DWG\CONTRACTOFF-SITE\20985G14.DWG LAYOUT: G-14 SAVED: 11/20/2012 5:08 PM ACADVER: 18.1S (LMS TECH) PAGESETUP: LD2B-PDF PLOTSTYLETABLE: PLTCONT.CTB PLOTTED: 11/29/2012 12:52 PM BY: SARTORI, KATHERINE
XREFS: 20985X00 20985X03 IMAGES: PROJECTNAME: ----

30' 0 30' 60'
1"=30'

THIS BAR REPRESENTS ONE INCH ON THE ORIGINAL DRAWING: USE TO VERIFY FIGURE REPRODUCTION SCALE

No.	Date	Revisions	By	Ckd

THIS DRAWING IS THE PROPERTY OF THE ARCADIS ENTITY IDENTIFIED IN THE TITLE BLOCK AND MAY NOT BE REUSED OR ALTERED IN WHOLE OR IN PART WITHOUT THE EXPRESS WRITTEN PERMISSION OF SAME.

Professional Engineer's Name: LOWELL W. McBURNEY
Professional Engineer's No.: 10767

State	Date Signed	Project Mgr.
NH		CRA
Designed by MAM	Drawn by .	Checked by LAF

DRAFT FOR EPA REVIEW

ARCADIS
ARCADIS U.S., INC.

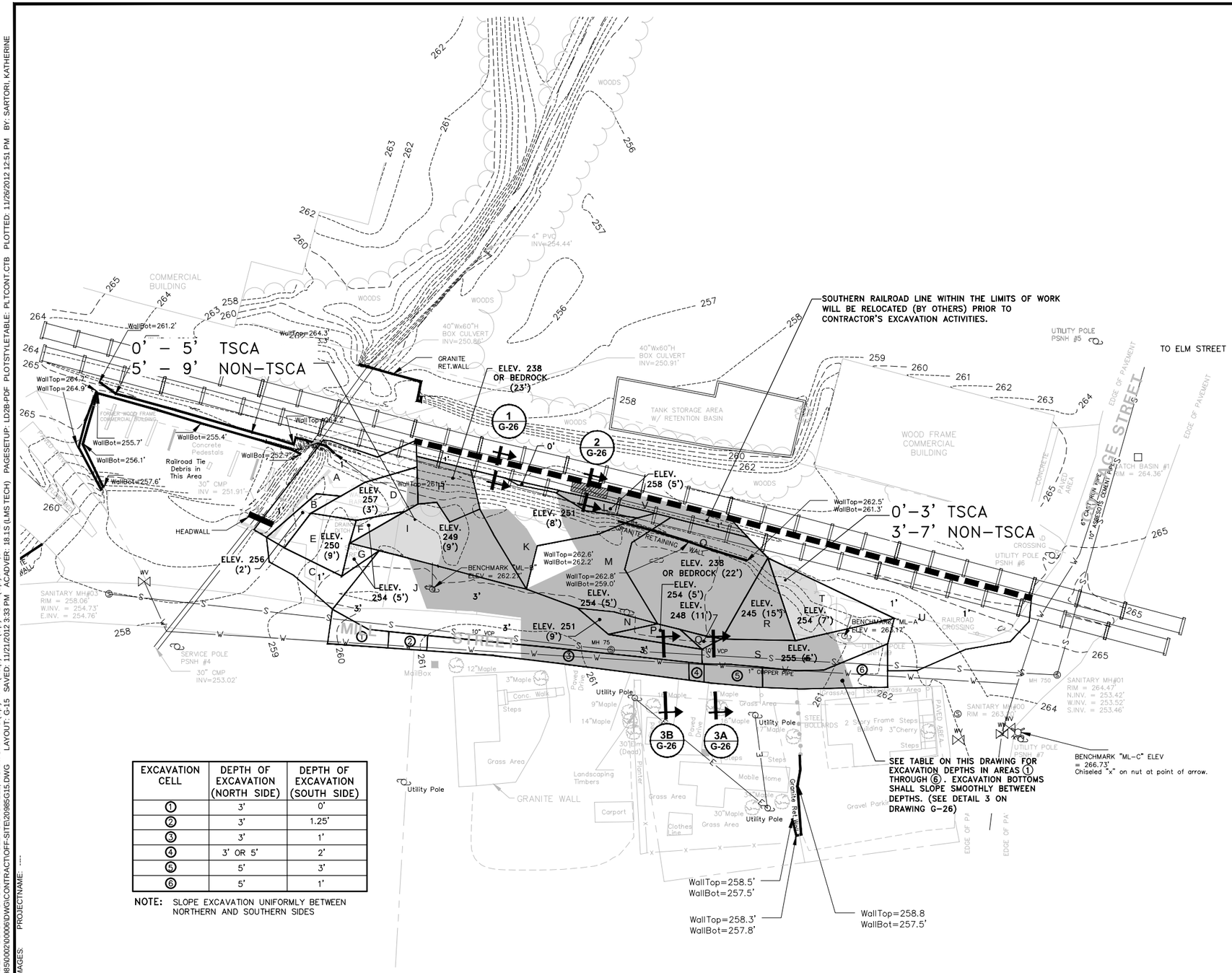
GENERAL ELECTRIC COMPANY
FLETCHER'S PAINT WORKS AND STORAGE FACILITY SUPERFUND SITE
MILFORD, NEW HAMPSHIRE
FINAL (100%) DESIGN REPORT

PHASE 2 SOIL REMOVAL AREAS - ELM STREET AREA

ARCADIS Project No. B0020985.0002.00006
Date NOVEMBER 2012

ARCADIS OF NEW YORK
6723 TOWPATH ROAD
P.O. BOX 66
SYRACUSE, NEW YORK
TEL. 315.446.9120

G-14



EXCAVATION CELL	DEPTH OF EXCAVATION (NORTH SIDE)	DEPTH OF EXCAVATION (SOUTH SIDE)
①	3'	0'
②	3'	1.25'
③	3'	1'
④	3' OR 5'	2'
⑤	5'	3'
⑥	5'	1'

NOTE: SLOPE EXCAVATION UNIFORMLY BETWEEN NORTHERN AND SOUTHERN SIDES

LEGEND:

- EXISTING INDEX SURFACE ELEVATION CONTOUR
- EXISTING INTERMEDIATE SURFACE ELEVATION CONTOUR
- JERSEY WALL BARRIER
- EXISTING STORM SEWER
- EXISTING WATER LINE
- EXISTING SANITARY SEWER
- EDGE OF PAVEMENT
- PROPERTY LINE
- RIGHT-OF-WAY
- EDGE OF DITCH
- EXISTING RAILROAD TRACKS
- EXCAVATION LIMITS
- ELEV. 245 (15') — BOTTOM OF EXCAVATION ELEVATION (DEPTH SHOWN IN PARENTHESES REPRESENTS APPROXIMATE DEPTH OF SAMPLE(S) REQUIRING REMOVAL AND IS PROVIDED FOR INFORMATIONAL PURPOSES ONLY)
- 4' — DEPTH OF EXCAVATION
- O — EXCAVATION ID
- UTILITY POLE
- CATCH BASIN
- SANITARY MANHOLE
- STORM MANHOLE
- WATER VALVE
- WATER METER
- TELEPHONE JACK
- FIRE HYDRANT
- ACP — ASBESTOS CONCRETE PIPE
- VCP — VITRIFIED CLAY PIPE
- LIMITS OF NON-TSCA MATERIAL
- LIMITS OF TSCA MATERIAL
- LIMITS OF NON-TSCA AND TSCA MATERIAL
- FOCUSED EXCAVATION (SEE DETAIL 2 ON DRAWING G-26)
- INDICATES A 1-FOOT VERTICAL TO 1.5 FOOT HORIZONTAL EXCAVATION SLOPE TO 1 FOOT BELOW BALLAST

NOTES:

1. REFER TO DRAWINGS G-1, G-3, AND G-32 FOR GENERAL NOTES PERTAINING TO BASE MAPPING, CONTRACT REQUIREMENTS, AND SITE INFORMATION.
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7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR SEGREGATING EXCAVATED TSCA AND NON-TSCA MATERIAL AS SHOWN ON THIS DRAWING. EXCAVATED SOILS CONTAINING TOTAL PCBS AT CONCENTRATIONS GREATER THAN OR EQUAL TO 50 mg/Kg SHALL BE HANDLED AS TSCA MATERIAL, AND DISPOSED OF AT AN OFF-SITE DISPOSAL FACILITY PERMITTED TO RECEIVE TSCA WASTE (E.G., WMI – MODEL CITY, NY). EXCAVATED SOILS CONTAINING TOTAL PCBS AT CONCENTRATIONS LESS THAN 50 mg/Kg MAY BE HANDLED AS NON-TSCA MATERIAL, AND DISPOSED OF AT AN OFF-SITE DISPOSAL FACILITY PERMITTED TO RECEIVE NON-HAZARDOUS WASTE (E.G., WMI – ROCHESTER, NH). ALL DISPOSAL FACILITIES MUST BE APPROVED BY GE AND EPA PRIOR TO SHIPMENT. IN ADDITION, ALL EXCAVATED MATERIAL SHALL BE PROCESSED/REDUCED IN SIZE, AS NECESSARY, TO FACILITATE PLACEMENT INTO TRANSPORTATION CONTAINERS AND TO MEET THE APPROPRIATE SIZING REQUIREMENTS AS DIRECTED BY THE RESPECTIVE DISPOSAL FACILITIES. FURTHERMORE, UNLESS DIRECT LOADED, EXCAVATED MATERIAL SHALL BE STAGED IN A LINED TEMPORARY STAGING AREA TO FACILITATE MATERIAL MIXING AND DEWATERING, AS NECESSARY TO CONDITION THE MATERIAL FOR OFF-SITE TRANSPORTATION AND DISPOSAL (REFER TO DETAIL 4 ON DRAWING G-25).
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11. THE CONTRACTOR MUST MANAGE ALL RAINWATER THAT ENTERS AN IMPACTED EXCAVATION OR IMPACTED SOIL MANAGEMENT AREA AS IF IT IS IMPACTED WATER.
12. FOR EXCAVATION CELLS U AND V, ONE FOOT EXCAVATION DEPTH IS MEASURED FROM THE BOTTOM OF BALLAST PRESENT ALONG THE RAILROAD TRACKS.
13. THE CONTRACTOR SHALL LOAD EXCAVATED MATERIALS INTO TRANSPORTATION VEHICLES DIRECTLY, IF POSSIBLE. TEMPORARY STOCKPILES, IF USED, SHALL BE LOCATED OVER SOILS SUBJECT TO FUTURE EXCAVATION OR IN LINED, BERMED AREAS. TEMPORARY STOCKPILES MUST BE COVERED WITH PROPERLY ANCHORED TARPS WHEN STOCKPILE OPERATIONS ARE NOT ONGOING.
14. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATION WITH GE'S TRANSPORTATION AND DISPOSAL CONTRACTOR FOR TRANSPORTATION VEHICLES AND WILL BE RESPONSIBLE FOR THE PREPARATION OF WASTE PROFILES, HAZARDOUS WASTE MANIFESTS, AND BILLS OF LADING FOR ALL MATERIALS TO BE TRANSPORTED FOR OFF-SITE DISPOSAL. CONTRACTOR SHALL BE RESPONSIBLE FOR LOADING MATERIALS FOR OFF-SITE TRANSPORTATION AND PLACARDING TRANSPORTATION VEHICLES IN ACCORDANCE WITH APPLICABLE REGULATIONS. ALL TRANSPORTATION VEHICLES USED TO TRANSPORT IMPACTED MATERIALS OFF-SITE SHALL BE COVERED WITH TARPS PRIOR TO OFF-SITE TRANSPORT.
15. FOR CLARITY, NOT ALL EXISTING FEATURES ARE SHOWN. SEE DRAWING G-3 FOR ALL EXISTING SITE FEATURES AND CONDITIONS.
16. SEE DRAWING G-26 FOR DETAILS ON FOCUSED EXCAVATION ALONG RAILROAD TRACKS.

1"=30' (30' 0 30' 60')

THIS BAR REPRESENTS ONE INCH ON THE ORIGINAL DRAWING: USE TO VERIFY FIGURE REPRODUCTION SCALE

No.	Date	Revisions	By	Ckd

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Professional Engineer's Name: LOWELL W. McBURNEY
Professional Engineer's No.: 10767
State: NH | Date Signed: | Project Mgr.: CRA
Designed by: MAM | Drawn by: . | Checked by: LAF

DRAFT FOR EPA REVIEW

ARCADIS
ARCADIS U.S., INC.

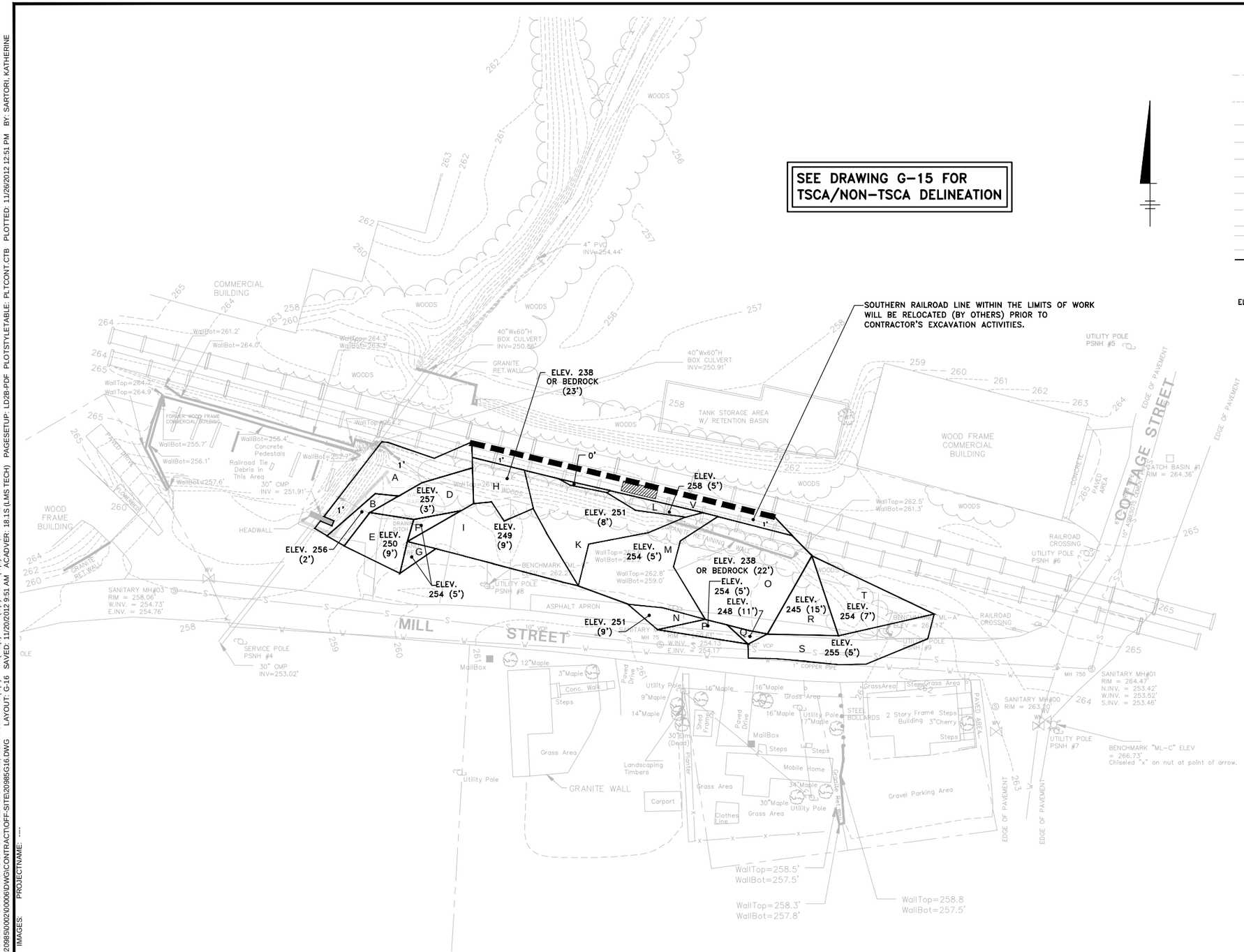
GENERAL ELECTRIC COMPANY
FLETCHER'S PAINT WORKS AND STORAGE FACILITY SUPERFUND SITE
MILFORD, NEW HAMPSHIRE
FINAL (100%) DESIGN REPORT

SOIL REMOVAL LIMITS - MILL STREET AREA

ARCADIS Project No. B0020985.0002.00006
Date: NOVEMBER 2012
ARCADIS OF NEW YORK
6723 TOWPATH ROAD
P.O. BOX 66
SYRACUSE, NEW YORK
TEL. 315.446.9120

G-15

CITY: SYRACUSE-NY DIV/GROUP: 14J/ENV DB: DMW GMS LJP B.PITTSLEY G.STOWELL, K.SARTORI PIC:(Opt) PM:(Reqd) TM:(Opt) LYR:(Opt)ON=*;OFF=*REF
V:\ENVCAD\SYRACUSE\ACT\B0020985\0002\00006\DWG\CONTRACT\OFF-SITE\20985G15.DWG LAYOUT: G-15 SAVED: 11/21/2012 3:33 PM ACADVER: 18.1S (LMS TECH) PAGESETUP: LD2B-PDF PLOTSTYLETABLE: PLTCONT.CTB PLOTTED: 11/26/2012 12:51 PM BY: SARTORI, KATHERINE
XREFS: 20985X00 20985X01 IMAGES: PROJECTNAME: ----



LEGEND:

- INDEX SURFACE ELEVATION CONTOUR
- INTERMEDIATE SURFACE ELEVATION CONTOUR
- EXISTING STORM SEWER
- EXISTING WATER LINE
- EXISTING SANITARY SEWER
- EDGE OF PAVEMENT
- PROPERTY LINE
- RIGHT-OF-WAY
- EDGE OF DITCH
- EXISTING RAILROAD TRACKS
- EXCAVATION LIMITS
- ELEV. 254 (7') — BOTTOM OF EXCAVATION ELEVATION (DEPTH SHOWN IN PARENTHESES REPRESENTS APPROXIMATE DEPTH OF SAMPLE(S) REQUIRING REMOVAL AND IS PROVIDED FOR INFORMATIONAL PURPOSES ONLY)
- T — EXCAVATION ID
- 4' — DEPTH OF EXCAVATION
- INDICATES A 1-FOOT VERTICAL TO 1.5 FOOT HORIZONTAL EXCAVATION SLOPE TO 1 FOOT BELOW BALLAST
- UTILITY POLE
- CATCH BASIN
- SANITARY MANHOLE
- STORM MANHOLE
- WATER VALVE
- WATER METER
- TELEPHONE JACK
- FIRE HYDRANT
- ACP — ASBESTOS CONCRETE PIPE
- VCP — VITRIFIED CLAY PIPE
- FOCUSED EXCAVATION (SEE DETAIL 2 ON DRAWING G-26)

NOTES:

1. REFER TO DRAWINGS G-1, G-3, AND G-32 FOR GENERAL NOTES PERTAINING TO BASE MAPPING, CONTRACT REQUIREMENTS, AND SITE INFORMATION.
2. LOCATIONS OF EXISTING STRUCTURES AND EXCAVATION AREAS ARE APPROXIMATE. CONTRACTOR SHALL FIELD VERIFY ALL LOCATIONS PRIOR TO CONSTRUCTION ACTIVITIES.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR IDENTIFYING, PROTECTING, AND RELOCATING (AS NECESSARY) ALL UTILITIES (OVERHEAD AND UNDERGROUND) THAT MAY BE IMPACTED BY CONSTRUCTION ACTIVITIES.
4. THE CONTRACTOR SHALL CONTROL DUST, VAPORS, AND ODORS THAT RESULT FROM THE REMEDIAL ACTIVITIES TO MEET ESTABLISHED AMBIENT STANDARDS.
5. THE CONTRACTOR SHALL UTILIZE DRY SOILS EXCAVATED FROM ABOVE THE WATER TABLE TO AUGMENT WET SOIL EXCAVATED FROM BELOW THE WATER TABLE. THE TEMPORARY STAGING, MIXING, AND DEWATERING AREAS MUST BE CONSTRUCTED AND MANAGED IN ACCORDANCE WITH DETAIL 4 ON DRAWING G-25.
6. SILT FENCING AND OTHER SEDIMENT AND EROSION CONTROL MEASURES SHALL BE ESTABLISHED AND MAINTAINED BY THE CONTRACTOR AS REQUIRED OR SPECIFIED.
7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR SEGREGATING EXCAVATED TSCA AND NON-TSCA MATERIAL AS SHOWN ON THIS DRAWING. EXCAVATED SOILS CONTAINING TOTAL PCBS AT CONCENTRATIONS GREATER THAN OR EQUAL TO 50 mg/Kg SHALL BE HANDLED AS TSCA MATERIAL, AND DISPOSED OF AT AN OFF-SITE DISPOSAL FACILITY PERMITTED TO RECEIVE TSCA WASTE (E.G., WMI – MODEL CITY, NY). EXCAVATED SOILS CONTAINING TOTAL PCBS AT CONCENTRATIONS LESS THAN 50 mg/Kg MAY BE HANDLED AS NON-TSCA MATERIAL, AND DISPOSED OF AT AN OFF-SITE DISPOSAL FACILITY PERMITTED TO RECEIVE NON-HAZARDOUS WASTE (E.G., WMI – ROCHESTER, NH). ALL DISPOSAL FACILITIES MUST BE APPROVED BY GE AND EPA PRIOR TO SHIPMENT. IN ADDITION, ALL EXCAVATED MATERIAL SHALL BE PROCESSED/REDUCED IN SIZE, AS NECESSARY, TO FACILITATE PLACEMENT INTO TRANSPORTATION CONTAINERS AND TO MEET THE APPROPRIATE SIZING REQUIREMENTS AS DIRECTED BY THE RESPECTIVE DISPOSAL FACILITIES. FURTHERMORE, UNLESS DIRECT LOADED, EXCAVATED MATERIAL SHALL BE STAGED IN A LINED TEMPORARY STAGING AREA TO FACILITATE MATERIAL MIXING AND DEWATERING, AS NECESSARY TO CONDITION THE MATERIAL FOR OFF-SITE TRANSPORTATION AND DISPOSAL (REFER TO DETAIL 4 ON DRAWING G-25).
8. WATER GENERATED DURING EXCAVATION ACTIVITIES INCLUDING, BUT NOT LIMITED TO, THE DEWATERING OF EXCAVATIONS, DEWATERING OF SOILS, AND DECONTAMINATION FLUIDS, SHALL BE COLLECTED AND TREATED AT AN ON-SITE TEMPORARY WATER TREATMENT FACILITY PRIOR TO DISCHARGE.
9. THE HORIZONTAL LIMITS OF EXCAVATION ACTIVITIES WILL BE PHYSICALLY DELINEATED IN THE FIELD BY THE CONTRACTOR. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE LAYOUT OF SURVEY CONTROLS, GRID COORDINATE LOCATIONS, LINES, GRADES, AND ELEVATIONS NECESSARY TO VERIFY EXCAVATION DEPTHS AND HORIZONTAL LIMITS.
10. REFER TO S-SERIES DRAWINGS FOR INFORMATION REGARDING EXCAVATION SUPPORT.
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15. FOR CLARITY, NOT ALL EXISTING FEATURES ARE SHOWN. SEE DRAWING G-3 FOR ALL EXISTING SITE FEATURES AND CONDITIONS.
16. SEE DRAWING G-26 FOR DETAILS ON FOCUSED EXCAVATION ALONG RAILROAD TRACKS.

CITY: SYRACUSE-NY DV/GROUP: 141/ENV DB: DMW GMS LJP B.PITTSLEY G.STOWELL, K.SARTORI PIC:(Opt) PM:(Reqd) TM:(Opt) LYR:(Opt)ON=*;OFF=*REF
V:\ENVCAD\SYRACUSE\ACT\CB0020985\0002\00006\DWG\CONTRACT\OFF-SITE\20985G16.DWG LAYOUT: G-16 SAVED: 11/20/2012 9:51 AM ACADVER: 18.1S (LMS TECH) PAGESETUP: LD2B-PDF PLOTSTYLETABLE: PLTCONT.CTB PLOTTED: 11/26/2012 12:51 PM BY: SARTORI, KATHERINE
XREFS: 20985X00 20985X01 IMAGES: PROJECTNAME: ----

1"=30' (30' 0 30' 60')

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No.	Date	Revisions	By	Ckd

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Professional Engineer's Name: LOWELL W. McBURNEY
Professional Engineer's No.: 10767
State: NH | Date Signed: | Project Mgr.: CRA
Designed by: MAM | Drawn by: | Checked by: LAF

DRAFT FOR EPA REVIEW

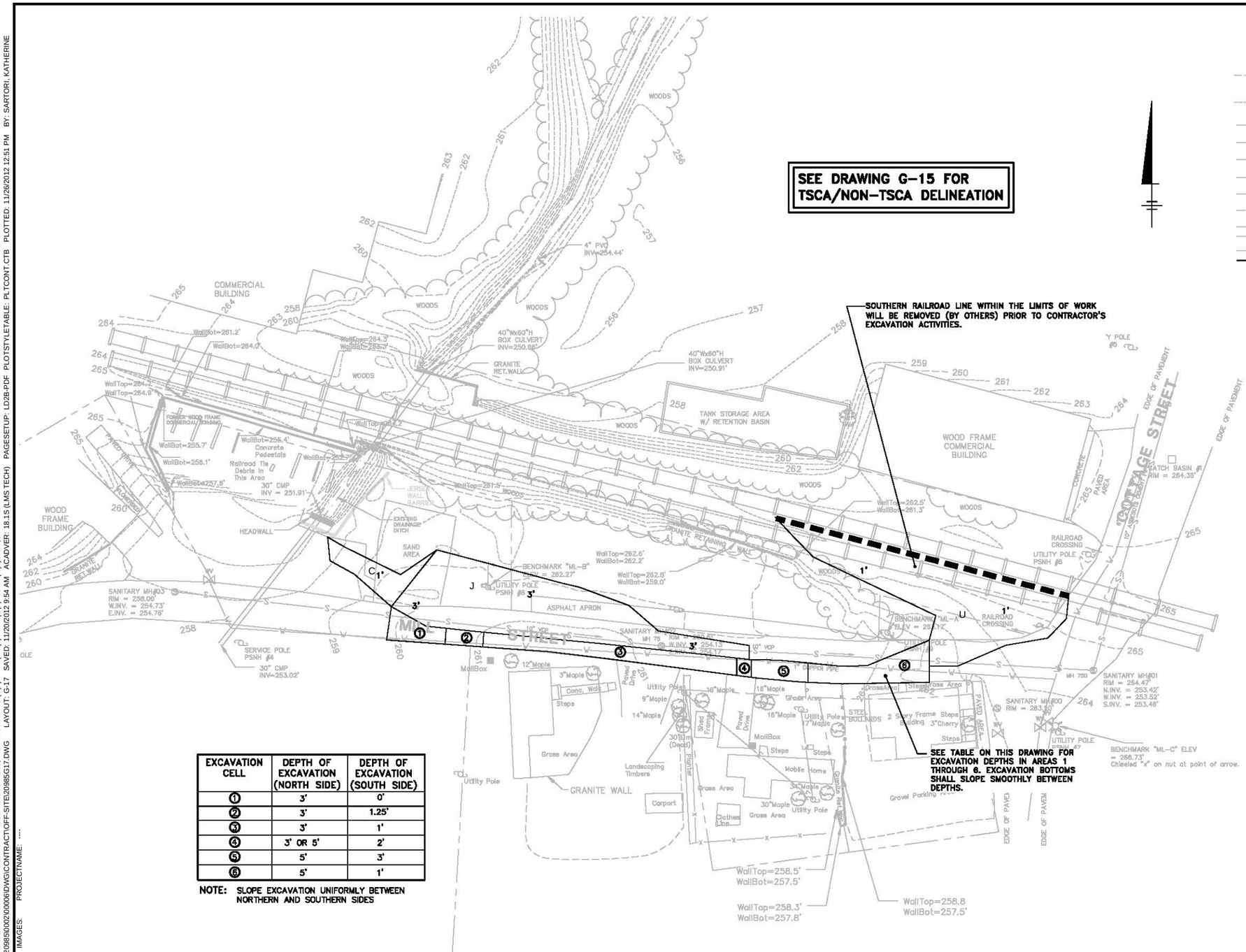
ARCADIS U.S., INC.

GENERAL ELECTRIC COMPANY
FLETCHER'S PAINT WORKS AND STORAGE FACILITY SUPERFUND SITE
MILFORD, NEW HAMPSHIRE
FINAL (100%) DESIGN REPORT

PHASE 1 SOIL REMOVAL AREAS - MILL STREET AREA

ARCADIS Project No. B0020985.0002.00006
Date NOVEMBER 2012
ARCADIS OF NEW YORK
6723 TOWPATH ROAD
P.O. BOX 66
SYRACUSE, NEW YORK
TEL. 315.446.9120

G-16



EXCAVATION CELL	DEPTH OF EXCAVATION (NORTH SIDE)	DEPTH OF EXCAVATION (SOUTH SIDE)
1	3'	0'
2	3'	1.25'
3	3'	1'
4	3' OR 5'	2'
5	5'	3'
6	5'	1'

NOTE: SLOPE EXCAVATION UNIFORMLY BETWEEN NORTHERN AND SOUTHERN SIDES

LEGEND:

- INDEX SURFACE ELEVATION CONTOUR
- INTERMEDIATE SURFACE ELEVATION CONTOUR
- EXISTING STORM SEWER
- EXISTING WATER LINE
- EXISTING SANITARY SEWER
- EDGE OF PAVEMENT
- PROPERTY LINE
- RIGHT-OF-WAY
- EDGE OF DITCH
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NOTES:

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6. SILT FENCING AND OTHER SEDIMENT AND EROSION CONTROL MEASURES SHALL BE ESTABLISHED AND MAINTAINED BY THE CONTRACTOR AS REQUIRED OR SPECIFIED.
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15. FOR CLARITY, NOT ALL EXISTING FEATURES ARE SHOWN. SEE DRAWING G-3 FOR ALL EXISTING SITE FEATURES AND CONDITIONS.

CITY: SYRACUSE-NY DIV/GROUP: 141/ENV DB: DMW GMS LJP B.PITTSLEY G.STOWELL, K.SARTORI PIC:(Opt) PM:(Reqd) TM:(Opt) LYR:(Opt)ON=*;OFF=*REF
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XREFS: 20985X00 20985X01 IMAGES: PROJECTNAME: ----

30' 0 30' 60'
1"=30'

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No.	Date	Revisions	By	Ckd

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Professional Engineer's Name: LOWELL W. McBURNEY
Professional Engineer's No.: 10767

State	Date Signed	Project Mgr.
NH		CRA
Designed by MAM	Drawn by .	Checked by LAF

DRAFT FOR EPA REVIEW

ARCADIS
ARCADIS U.S., INC.

GENERAL ELECTRIC COMPANY
FLETCHER'S PAINT WORKS AND STORAGE FACILITY SUPERFUND SITE
MILFORD, NEW HAMPSHIRE
FINAL (100%) DESIGN REPORT

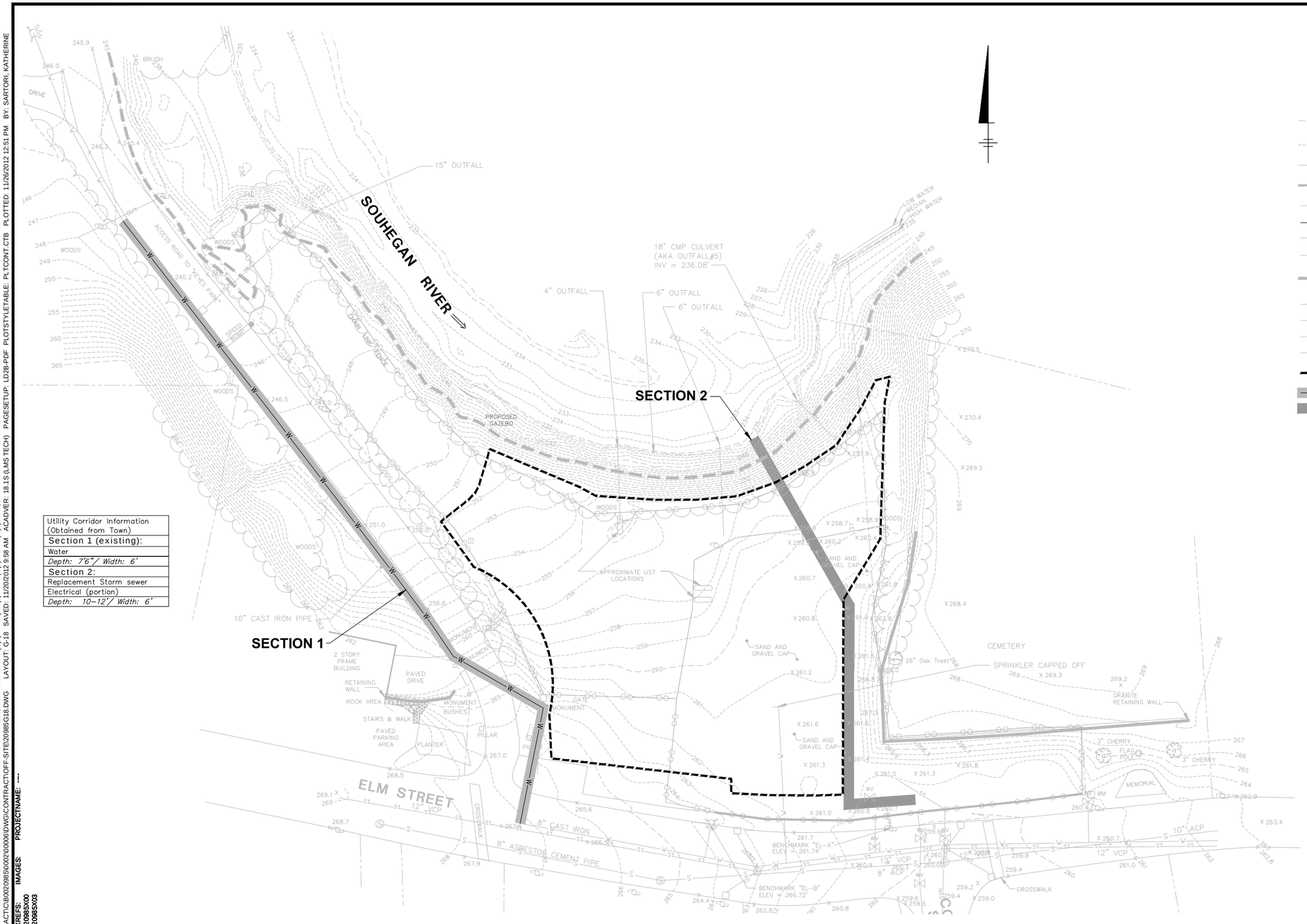
PHASE 2 SOIL REMOVAL AREAS - MILL STREET AREA

ARCADIS Project No. B0020985.0002.00006

Date NOVEMBER 2012

ARCADIS OF NEW YORK
6723 TOWPATH ROAD
P.O. BOX 66
SYRACUSE, NEW YORK
TEL. 315.446.9120

G-17



Utility Corridor Information (Obtained from Town)
Section 1 (existing):
Water
Depth: 7'6"/ Width: 6'
Section 2:
Replacement Storm sewer
Electrical (portion)
Depth: 10-12'/ Width: 6'

LEGEND:

- INDEX SURFACE ELEVATION CONTOUR
- INTERMEDIATE SURFACE ELEVATION CONTOUR
- CHAIN LINK FENCE
- JERSEY WALL BARRIER WITH CHAIN LINK FENCE
- EXISTING STORM SEWER
- EXISTING WATER LINE
- EXISTING SANITARY SEWER
- INFERRED UTILITY LOCATION
- APPROXIMATE ELEVATION OF 100-YEAR FLOOD PLAIN (245)
- EDGE OF PAVEMENT
- PROPERTY LINE
- RIGHT-OF-WAY
- EXISTING EDGE OF WATER
- APPROXIMATE AREA OF COVER SYSTEM
- EXISTING UTILITY CORRIDOR
- PROPOSED UTILITY CORRIDOR
- UTILITY POLE
- CATCH BASIN
- SANITARY MANHOLE
- STORM MANHOLE
- WATER VALVE
- WATER METER
- TELEPHONE JACK
- FIRE HYDRANT
- ACP ASBESTOS CONCRETE PIPE
- VCP VITRIFIED CLAY PIPE

NOTES:

1. REFER TO DRAWINGS G-1, G-2, AND G-32 FOR GENERAL NOTES PERTAINING TO BASE MAPPING, CONTRACT REQUIREMENTS, AND SITE INFORMATION.
2. THE TOWN WILL PROVIDE ALL PIPING MANHOLES AND APPURTENANCES FOR THE NEW STORM SEWER TO BE INSTALLED BY THE CONTRACTOR ALONG THE WESTERN SLOPE OF THE CEMETERY (I.E., SECTION 2). SEE NOTE 17 ON DRAWING G-12 AND DRAWING G-20 FOR ADDITIONAL DETAILS REGARDING REPLACEMENT STORM SEWER.
3. THE CONTRACTOR IS RESPONSIBLE FOR REPAIRING/REPLACING ANY EXISTING UTILITIES THAT ARE TO REMAIN IN PLACE BUT ARE DAMAGED BY THE CONTRACTOR DURING SITE ACTIVITIES.
4. IN CERTAIN AREAS OF THE SITE, OVEREXCAVATION WILL BE REQUIRED TO INSTALL THE REPLACEMENT STORM SEWER. IN SUCH INSTANCES, MATERIAL EXCAVATED BEYOND THAT REQUIRED TO MEET THE SOIL CLEANUP LEVELS MUST BE USED AS BACKFILL FOR DEEPER EXCAVATIONS THAT ARE IN THE COVER (I.E., NOT IN UTILITY CORRIDORS, TREE PLANTING AREAS AND RIPRAP SLOPES).

CITY: SYRACUSE-NY DIV/GROUP: 14J/ENV DB: DMW GMS LJP B.PITTSLEY G.STOWELL, K.SARTORI PIC:(Opt) PM:(Reqd) TM:(Opt) LYR:(Opt)ON=*;OFF=*REF
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Professional Engineer's Name: LOWELL W. McBURNEY
Professional Engineer's No.: 10767

State	Date Signed	Project Mgr.
NH		CRA
Designed by MAM	Drawn by .	Checked by LAF

DRAFT FOR EPA REVIEW

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MILFORD, NEW HAMPSHIRE
FINAL (100%) DESIGN REPORT

UTILITY CORRIDOR PLAN - ELM STREET AREA

ARCADIS Project No. B0020985.0002.00006

Date NOVEMBER 2012

ARCADIS OF NEW YORK
6723 TOWPATH ROAD
P.O. BOX 66
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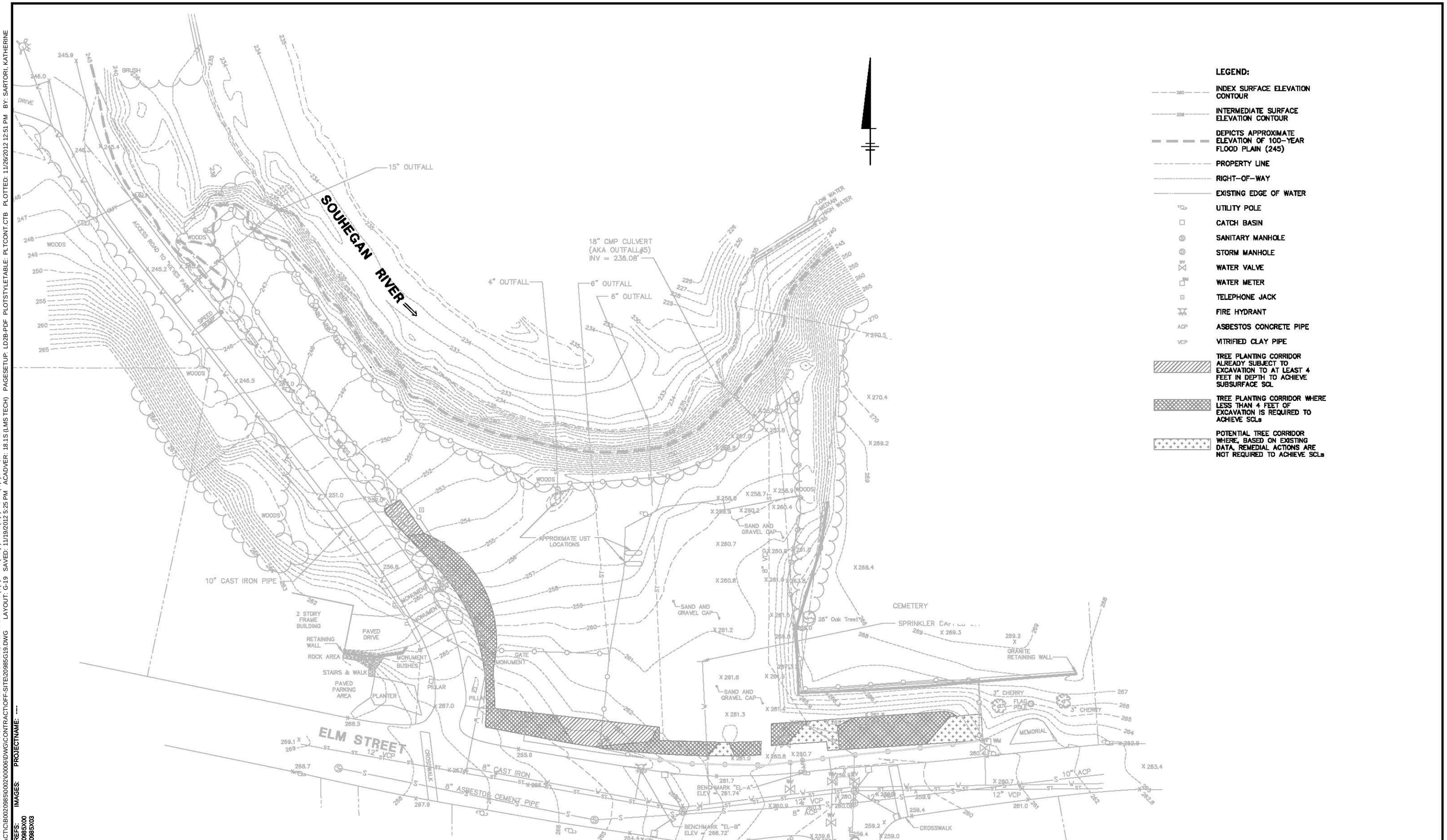
G-18



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State: NH | Date Signed: | Project Mgr.: CRA
Designed by: MAM | Drawn by: . | Checked by: LAF

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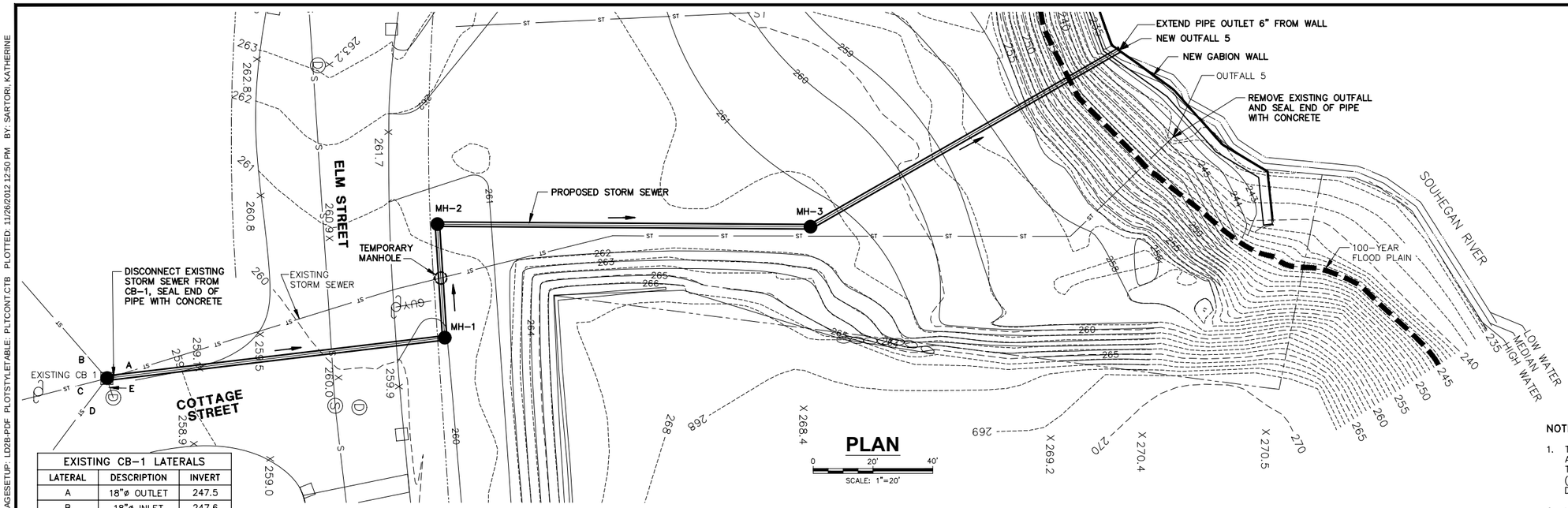
GENERAL ELECTRIC COMPANY
FLETCHER'S PAINT WORKS AND STORAGE FACILITY SUPERFUND SITE
MILFORD, NEW HAMPSHIRE
FINAL (100%) DESIGN REPORT

TREE PLANTING CORRIDORS - ELM STREET AREA

ARCADIS Project No. B0020985.0002.00006
Date NOVEMBER 2012

ARCADIS OF NEW YORK
6723 TOWPATH ROAD
P.O. BOX 66
SYRACUSE, NEW YORK
TEL. 315.446.9120

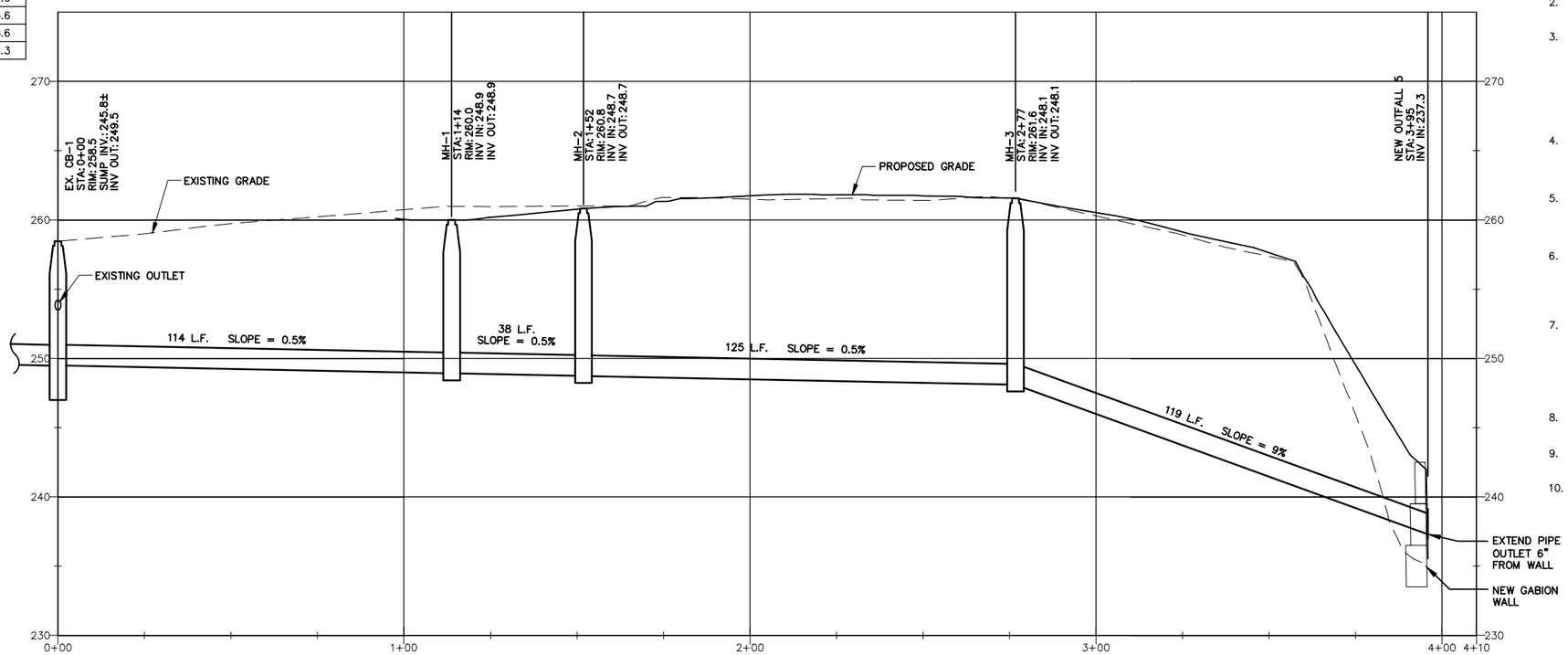
G-19



PLAN

0 20' 40'
SCALE: 1"=20'

EXISTING CB-1 LATERALS		
LATERAL	DESCRIPTION	INVERT
A	18"ø OUTLET	247.5
B	18"ø INLET	247.6
C	18"ø INLET	254.6
D	12"ø INLET	253.6
E	8"ø OUTLET	253.3



PROFILE

0 20' 40'
HORIZONTAL SCALE: 1"=20'

0 5' 10'
VERTICAL SCALE: 1"=5'

LEGEND:

- 260 — EXISTING INDEX SURFACE ELEVATION CONTOUR
- 259 — EXISTING INTERMEDIATE SURFACE ELEVATION CONTOUR
- UTILITY POLE
- CATCH BASIN
- MH-2 — PROPOSED STORM SEWER AND MANHOLE
- 266 — PROPOSED SURFACE ELEVATION CONTOUR

NOTES:

1. THE TOWN OF MILFORD WILL PROVIDE ALL PIPING MANHOLES AND APPURTENANCES FOR THE NEW STORM SEWER TO BE INSTALLED BY THE CONTRACTOR ALONG THE WESTERN SLOPE OF THE CEMETERY (i.e., SECTION 2). SEE NOTE 17 ON DRAWING G-12 FOR ADDITIONAL DETAILS REGARDING REPLACEMENT STORM SEWER.
2. MANHOLES SHALL BE 5' 0" DIAMETER AS SPECIFIED BY TOWN OF MILFORD, NH. SEE NOTE 3.
3. THE CONTRACTOR SHALL CONDUCT REPLACEMENT ACTIVITIES IN ACCORDANCE WITH THE TOWN OF MILFORD, NH DEPARTMENT OF PUBLIC WORKS INFRASTRUCTURE DESIGN, CONSTRUCTION AND ADMINISTRATION STANDARDS AND THE TOWN OF MILFORD, NH WATER AND SEWER COMMISSION STANDARD REGULATIONS AND SPECIFICATIONS FOR DESIGN AND CONSTRUCTION OF WATER AND SEWER INFRASTRUCTURE, INCLUDED AS IN APPENDIX C OF THE FINAL 100% DESIGN REPORT.
4. THE CONTRACTOR SHALL CONDUCT REPLACEMENT ACTIVITIES FOR THE PORTION OF THE STORM SEWER. UTILITY BETWEEN CB-1 AND THE TEMPORARY MANHOLE PRIOR TO INITIATION OF EXCAVATION DEWATERING ACTIVITIES AT THE MILL STREET AREA.
5. THE CONTRACTOR SHALL INSTALL A TEMPORARY MANHOLE AT THE LOCATION INDICATED AND TIE FLOW FROM MH-1 TO THE EXISTING STORM SEWER FOR DISCHARGE TO THE SOUHEGAN RIVER UNTIL NEW STORM SEWER IS INSTALLED.
6. THE CONTRACTOR SHALL REMOVE ALL BLOCKAGES WITHIN THE EXISTING STORM SEWER LINE BETWEEN THE TEMPORARY WATER TREATMENT SYSTEM DISCHARGE POINT AND OUTFALL 5. ALL WATER, SEDIMENT, AND DEBRIS GENERATED SHALL BE CONTAINED & COLLECTED FOR PROPER HANDLING & DISPOSAL AS REQUIRED.
7. THE NEW PIPING SECTION FROM THE LOCATION OF THE TEMPORARY MANHOLE TO NEW MANHOLE MH-2 WILL BE INSTALLED FOLLOWING INSTALLATION OF ALL NEW PIPING DOWNSTREAM OF MH-2 AND AT THAT TIME THE TEMPORARY MANHOLE WILL EITHER BE REMOVED OR ABANDONED IN PLACE. UPON COMPLETION OF THIS WORK THE EXISTING STORM SEWER PIPING WILL BE SEALED AND ABANDONED IN PLACE.
8. ALL ELEVATIONS ARE BASED ON NORTH AMERICAN VERTICAL DATUM 1988 (NAVD88).
9. PROVIDE GABION WALL PIPE OPENING AS RECOMMENDED BY THE GABION BASKET MANUFACTURER.
10. PROVIDE PIPE PROTECTION AT WALL OPENING AS RECOMMENDED BY THE PIPE MANUFACTURER.

CITY: SYRACUSE DIV/GROUP: ENVCAD DB: L. POSENAUER G. STOWELL L. FORAKER LD: PIC: P. FARR PM: C. AVERILL TM: C. AVERILL LYR: ON=*; OFF=*REF*
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XREFS: 20985X07 20985X00 20985X14 IMAGES: PROJECTNAME: ----

SCALE(S) AS INDICATED

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Professional Engineer's Name: LOWELL W. McBURNEY
Professional Engineer's No.: 10767
State: NH | Date Signed: | Project Mgr.: CRA
Designed by: MAM | Drawn by: ACB | Checked by: KMD

DRAFT FOR EPA REVIEW

ARCADIS U.S., INC.

GENERAL ELECTRIC COMPANY
FLETCHER'S PAINT WORKS AND STORAGE FACILITY SUPERFUND SITE
MILFORD, NEW HAMPSHIRE
FINAL (100%) DESIGN REPORT

REPLACEMENT STORM SEWER UTILITY - ELM STREET AREA

ARCADIS Project No. B0020985.0002.00006
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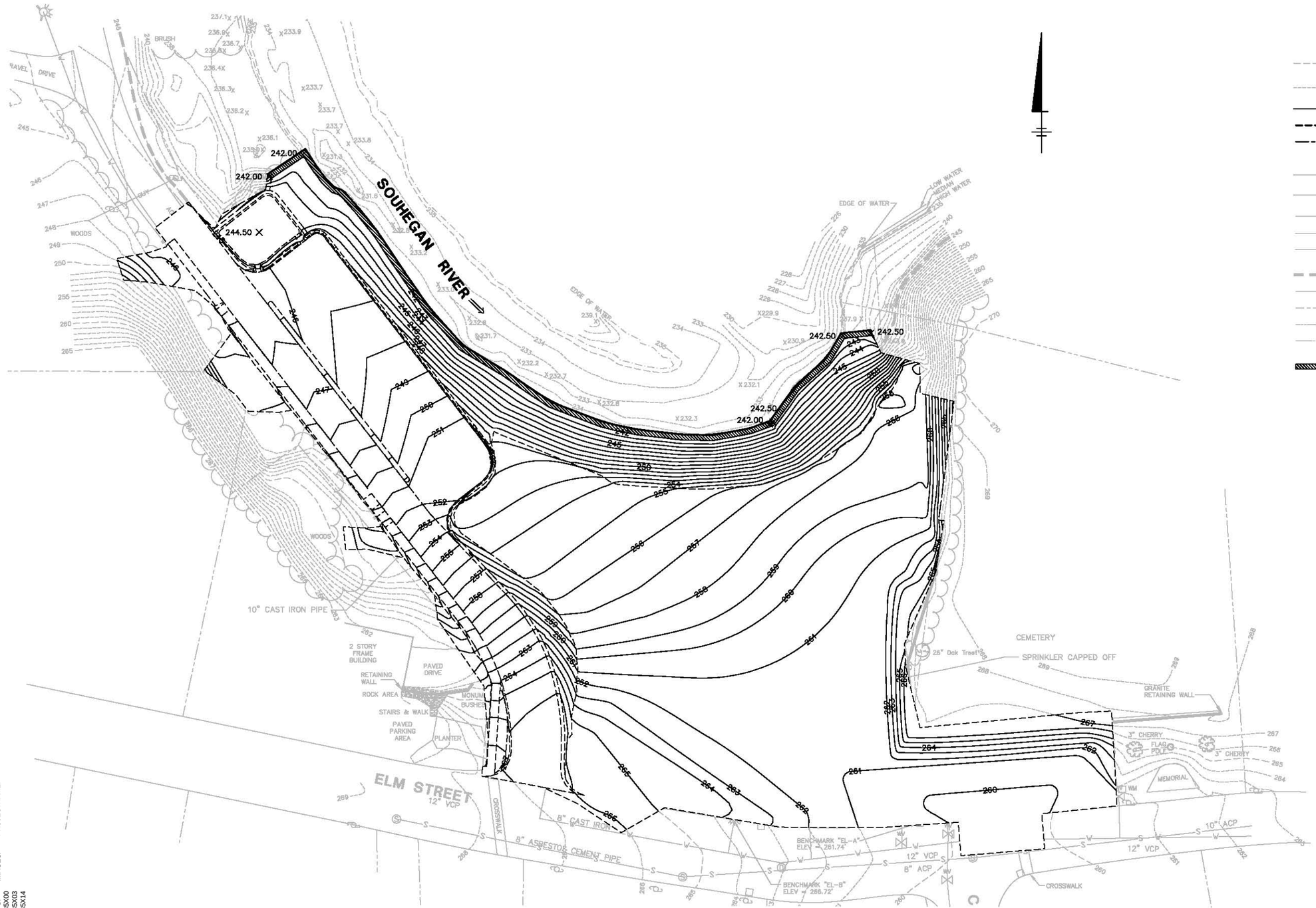
G-20



LEGEND:

- INDEX SURFACE ELEVATION CONTOUR
- INTERMEDIATE SURFACE ELEVATION CONTOUR
- PROPOSED CONTOUR
- PROPOSED GRADE BREAK
- LIMIT OF GRADING
- x282.5 PROPOSED SPOT ELEVATION
- CHAIN LINK FENCE
- JERSEY WALL BARRIER WITH CHAIN LINK FENCE
- EXISTING STORM SEWER
- EXISTING WATER LINE
- EXISTING SANITARY SEWER
- APPROXIMATE ELEVATION OF 100-YEAR FLOOD PLAIN (245)
- EDGE OF PAVEMENT
- PROPERTY LINE
- RIGHT-OF-WAY
- EXISTING EDGE OF WATER
- APPROXIMATE LOCATION OF PROPOSED GABION RETAINING WALL/SHEETPILE (1 / G-27)
- UTILITY POLE
- CATCH BASIN
- SANITARY MANHOLE
- STORM MANHOLE
- WATER VALVE
- WATER METER
- TELEPHONE JACK
- FIRE HYDRANT
- ACP ASBESTOS CONCRETE PIPE
- VCP VITRIFIED CLAY PIPE

NOTES:

1. REFER TO DRAWINGS G-1, G-2, AND G-32 FOR GENERAL NOTES PERTAINING TO BASE MAPPING, CONTRACT REQUIREMENTS, AND SITE INFORMATION.
2. SEE DRAWING G-23 FOR SITE RESTORATION ACTIVITIES.

CITY: SYRACUSE DIV/GROUP: ENVCAD DB: L. POSENAUER G. STOWELL L. FORAKER LD: PIC: P. FARR PM: C. AVERILL TM: C. AVERILL LYR: ON=*; OFF=*REF*
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1"=30' 30' 0 30' 60'

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Professional Engineer's No.: 10767
State: NH | Date Signed: | Project Mgr.: CRA
Designed by: MAM | Drawn by: . | Checked by: LAF

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FINAL GRADING PLAN - ELM STREET AREA

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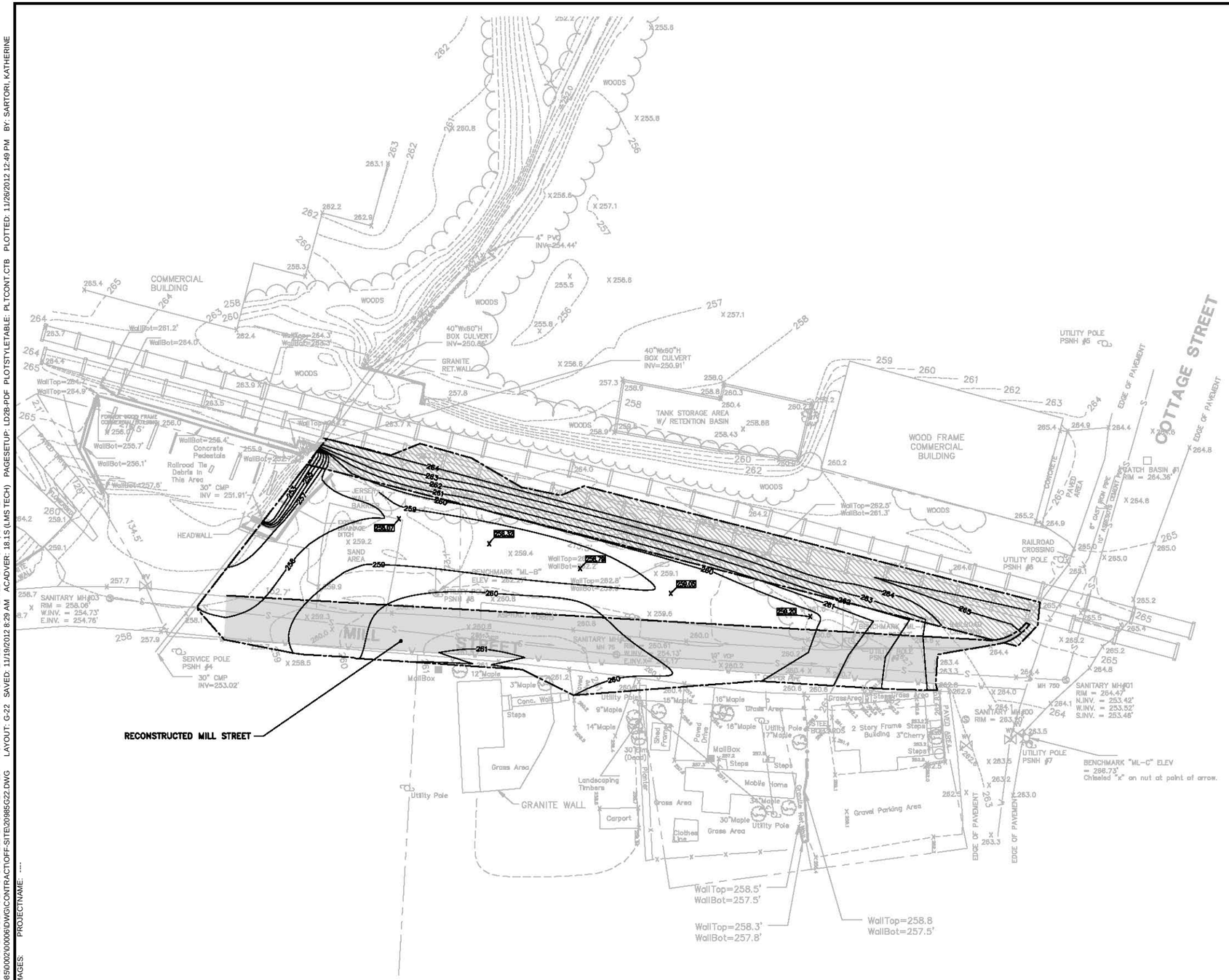
G-21



LEGEND:

- EXISTING INDEX SURFACE ELEVATION CONTOUR
- EXISTING INTERMEDIATE SURFACE ELEVATION CONTOUR
- PROPOSED CONTOUR (FINAL CONTOURS TO BE DETERMINED IN CONJUNCTION WITH THE TOWN OF MILFORD)
- LIMIT OF GRADING
- JERSEY WALL BARRIER
- EDGE OF PAVEMENT
- PROPERTY LINE
- RIGHT-OF-WAY
- EDGE OF DITCH
- FINAL GRADES IN THIS AREA TO BE DETERMINED IN CONSULTATION WITH GUILFORD RAILROAD COMPANY
- UTILITY POLE
- CATCH BASIN
- SANITARY MANHOLE
- STORM MANHOLE
- WATER VALVE
- WATER METER
- TELEPHONE JACK
- FIRE HYDRANT
- ACP ASBESTOS CONCRETE PIPE
- VCP VITRIFIED CLAY PIPE

NOTES:

1. REFER TO DRAWINGS G-1, G-3, AND G-32 FOR GENERAL NOTES PERTAINING TO BASE MAPPING, CONTRACT REQUIREMENTS, AND SITE INFORMATION.
2. SEE DRAWING G-24 FOR SITE RESTORATION ACTIVITIES.

CITY: SYRACUSE DIV/GROUP: ENVCAD DB: L. POSENAUER G. STOWELL L. FORAKER LD: PIC: P. FARR PM: C. AVERILL TM: C. AVERILL LYR: ON=*; OFF=*REF*
VIEWCAD:SYRACUSEACT:CIB\0020985\0002\00006\DWG\CONTRACT\OFF-SITE\20985G22.DWG LAYOUT: G-22 SAVED: 11/19/2012 8:29 AM ACADVER: 18.1S (LMS TECH) PAGESETUP: LD2B-PDF PLOTSTYLETABLE: PLTCONT.CTB PLOTTED: 11/26/2012 12:49 PM BY: SARTORI, KATHERINE
XREFS: 20985X01 20985X00 IMAGES: PROJECTNAME: ----

1"=30' 30' 0 30' 60'

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Professional Engineer's Name: LOWELL W. McBURNEY
Professional Engineer's No.: 10767
State: NH | Date Signed: | Project Mgr.: CRA
Designed by: MAM | Drawn by: . | Checked by: LAF

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GENERAL ELECTRIC COMPANY
FLETCHER'S PAINT WORKS AND STORAGE FACILITY SUPERFUND SITE
MILFORD, NEW HAMPSHIRE
FINAL (100%) DESIGN REPORT

FINAL GRADING PLAN - MILL STREET AREA

ARCADIS Project No. B0020985.0002.00006
Date NOVEMBER 2012

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6723 TOWPATH ROAD
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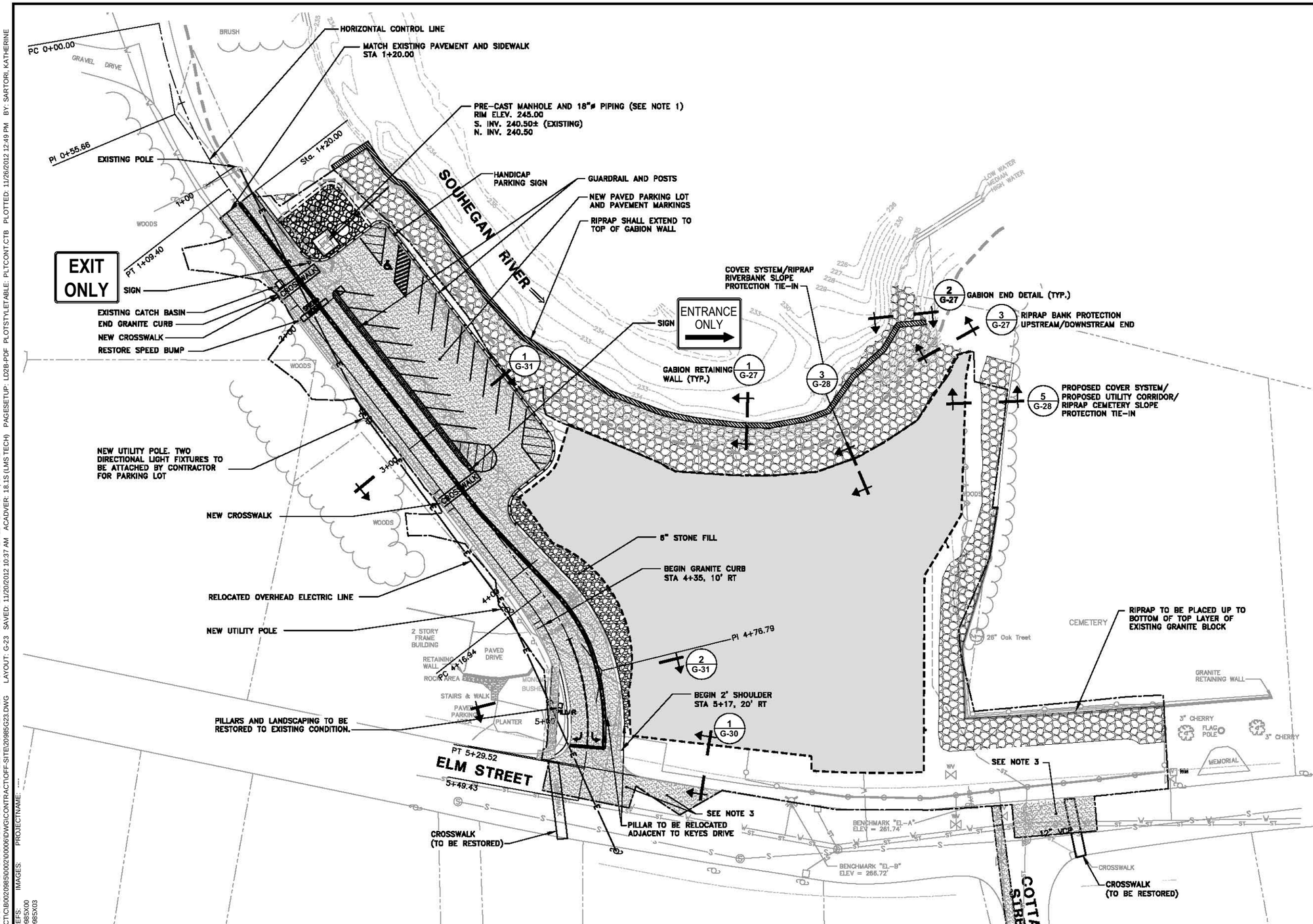
G-22



LEGEND:

- PROPERTY LINE
- RIGHT-OF-WAY
- EXISTING EDGE OF WATER
- APPROXIMATE AREA OF COVER SYSTEM (1/G-28)
- APPROXIMATE LOCATION OF RIPRAP
- APPROXIMATE AREA SUBJECT TO VEGETATIVE RESTORATION (TOPSOIL AND GRASS SEED) (2/G-28)
- APPROXIMATE AREA OF NEW PAVEMENT
- APPOROXIMATE LOCATION OF STONE FILL
- APPROXIMATE LOCATION OF GABION RETAINING WALL/SHEETPILE (1/G-27)
- APPROXIMATE LOCATION OF STORMWATER RETENTION AREA (1/G-29)
- UTILITY POLE
- CATCH BASIN
- SANITARY MANHOLE
- STORM MANHOLE
- WATER VALVE
- WATER METER
- TELEPHONE JACK
- FIRE HYDRANT
- ACP — ASBESTOS CONCRETE PIPE
- VCP — VITRIFIED CLAY PIPE
- EXISTING STORM SEWER
- ST — PROPOSED STORM SEWER
- EXISTING CATCH BASIN
- PROPOSED CATCH BASIN

NOTE:

1. REFER TO DRAWINGS G-1, G-2, AND G-32 FOR GENERAL NOTES PERTAINING TO BASE MAPPING, CONTRACT REQUIREMENTS, AND SITE INFORMATION.
2. DRAINAGE STRUCTURES AND PIPING SHALL BE FURNISHED AND INSTALLED PER THE TOWN OF MILFORD INFRASTRUCTURE DESIGN, CONSTRUCTION AND ADMINISTRATION STANDARDS. PIPE MATERIALS TO BE PROVIDED BY THE TOWN OF MILFORD.
3. THIS DRAWING MAY NOT INDICATE ALL FEATURES SUBJECT TO REPLACEMENT AS PART OF SITE RESTORATION ACTIVITIES. THIS WILL NOT RELIEVE THE CONTRACTOR FROM REPLACING ANY AND ALL SUCH ITEMS AT NO ADDITIONAL COST TO GE.
4. SEE PAVEMENT REPAIR DETAIL ON DRAWING T-5 FOR NEW PAVEMENT CONSTRUCTION ON ELM STREET.
5. EXISTING JERSEY BARRIERS TO BE REMOVED AND CLEANED DISPOSED OF CONSISTENT WITH THE MATERIAL THEY WERE PLACED ON (i.e., TSCA VS. NON-TSCA). SEE DRAWING G-10. FENCING COMPONENTS NOT IN CONTACT WITH THE GROUND (e.g., POSTS AND FABRIC) TO BE DISPOSED OF AS NON-TSCA. FENCE SUPPORTS IN CONTACT WITH THE GROUND TO BE DISPOSED OF CONSISTENT WITH THE MATERIAL THEY WERE RESTING ON.

CITY: SYRACUSE DIV/GROUP: ENVCAD DB: L. POSENAUER G. STOWELL L. FORAKER LD: PIC: P. FARR PM: C. AVERILL TM: C. AVERILL LYR: ON=*; OFF=*REF*
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1"=30' (30' 0 30' 60')

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Professional Engineer's No.: 10767
State: NH | Date Signed: | Project Mgr.: CRA
Designed by: MAM | Drawn by: . | Checked by: .

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FLETCHER'S PAINT WORKS AND STORAGE FACILITY SUPERFUND SITE
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SITE RESTORATION PLAN - ELM STREET AREA

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G-23

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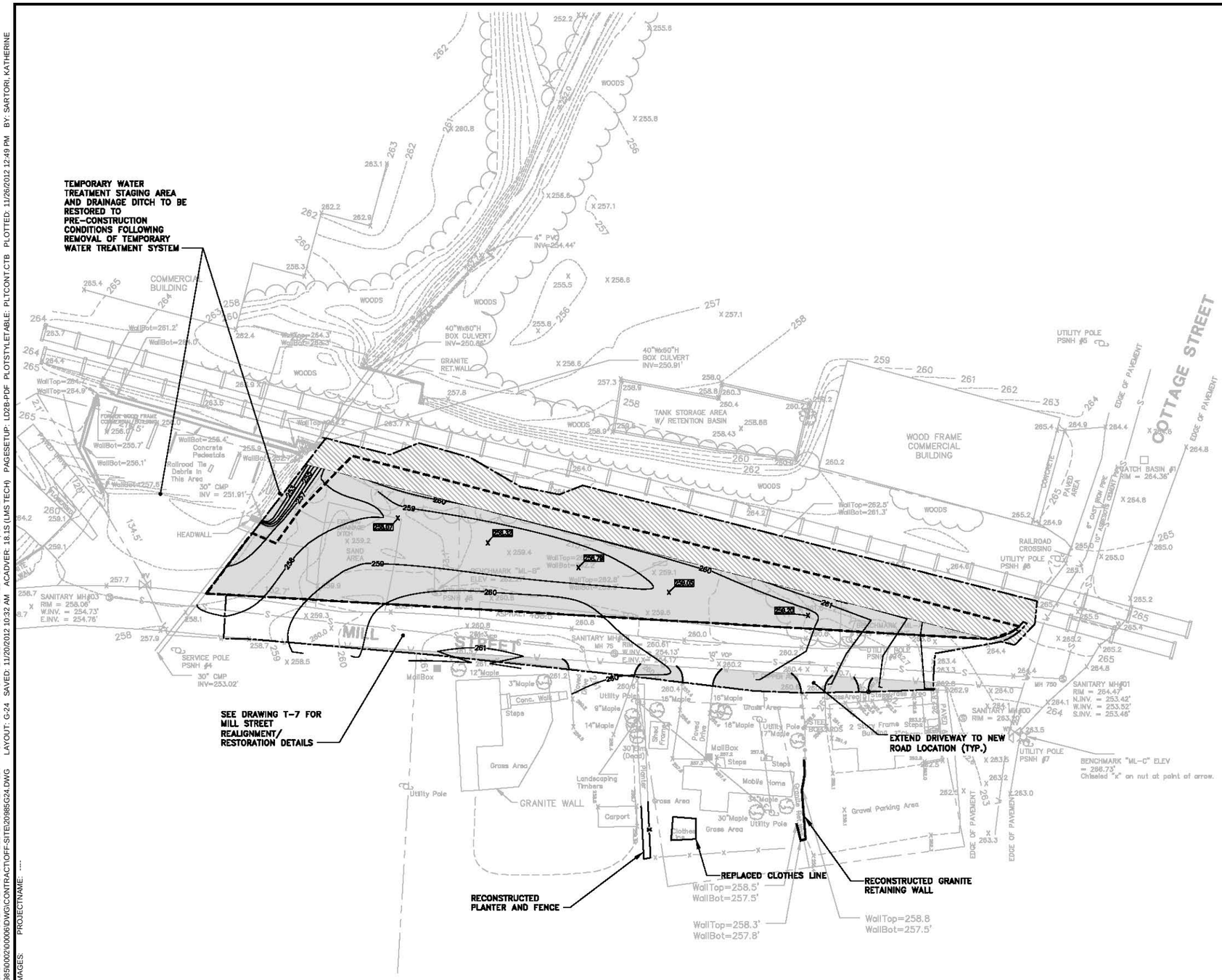

LEGEND:

- EXISTING INDEX SURFACE ELEVATION CONTOUR
- EXISTING INTERMEDIATE SURFACE ELEVATION CONTOUR
- PROPOSED CONTOUR
- JERSEY WALL BARRIER
- EDGE OF PAVEMENT
- PROPERTY LINE
- RIGHT-OF-WAY
- EDGE OF DITCH
- FINAL GRADES IN THIS AREA TO BE DETERMINED IN CONSULTATION WITH GUILFORD RAILROAD COMPANY
- APPROXIMATE AREA OF VEGETATED COVER (2 / G-28)
- UTILITY POLE
- CATCH BASIN
- SANITARY MANHOLE
- STORM MANHOLE
- WATER VALVE
- WATER METER
- TELEPHONE JACK
- FIRE HYDRANT
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- VCP VITRIFIED CLAY PIPE

NOTES:

1. REFER TO DRAWINGS G-1, G-3, AND G-32 FOR GENERAL NOTES PERTAINING TO BASE MAPPING, CONTRACT REQUIREMENTS, AND SITE INFORMATION.
2. THE DRAWING MAY NOT INDICATE ALL FEATURES SUBJECT TO REPLACEMENT AS PART OF SITE RESTORATION ACTIVITIES. THIS WILL NOT RELIEVE THE CONTRACTOR FROM REPLACING ANY AND ALL SUCH ITEMS AT NO ADDITIONAL COST.
3. RESIDENTIAL PROPERTIES WILL BE RESTORED WITH MATERIALS OF LIKE KIND (e.g., GRASS, ASPHALT, GRAVEL, ETC.) AS THOSE EXISTING PRIOR TO REMEDIATION ACTIVITIES (EXCEPT AS NOTED ON THE DRAWINGS), UNLESS OTHERWISE APPROVED BY THE PROPERTY OWNER.

30' 0 30' 60'
1"=30'

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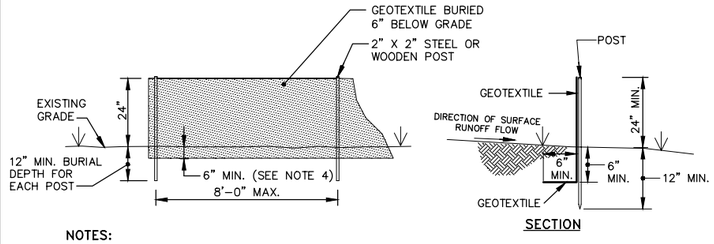
G-24

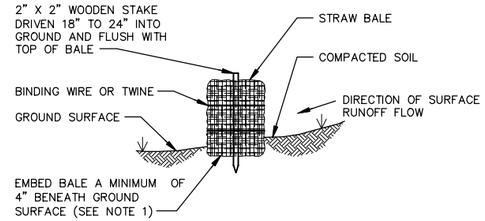


NOTES:

1. SEDIMENT DEPOSITS SHALL BE REMOVED WHEN DEPOSITS REACH APPROXIMATELY ONE-HALF OF THE HEIGHT OF THE SILT FENCE.
2. THE SILT FENCE WILL REMAIN IN PLACE UNTIL COMPLETION OF PROJECT WORK.
3. SILT FENCE SHALL BE INSTALLED IN CONJUNCTION WITH STRAW BALES IN AREAS IDENTIFIED, AREAS OF ANTICIPATED HIGH FLOW, AND/OR IN OTHER AREAS THE ENGINEER DETERMINES NECESSARY.
4. THE SILT FENCE SHALL BE FOLDED INTO A TRENCH WITH A MINIMUM LENGTH OF 12 INCHES AND BACKFILLED WITH CLEAN FILL.

TYPICAL SILT FENCE DETAIL (1)

NOT TO SCALE

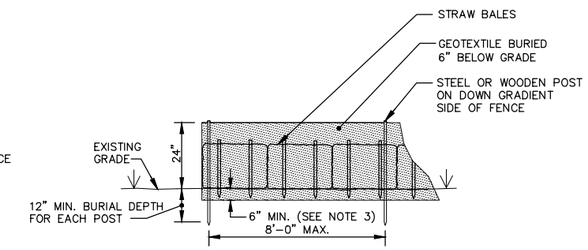


NOTES:

1. HAY BALES WILL ONLY BE TRENCHED INTO THE GROUND IF USED IN THE ABSENCE OF A SILT FENCE.

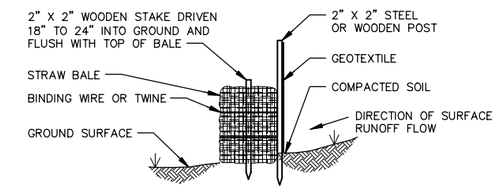
TYPICAL STRAW BALE DETAIL (2)

NOT TO SCALE



NOTES:

1. SEDIMENT DEPOSITS SHALL BE REMOVED WHEN DEPOSITS REACH APPROXIMATELY ONE-HALF OF THE HEIGHT OF THE SILT FENCE.
2. THE SILT FENCE SHALL REMAIN IN PLACE UNTIL COMPLETION OF PROJECT WORK.
3. THE SILT FENCE SHALL BE FOLDED INTO A TRENCH WITH A MINIMUM LENGTH OF 12 INCHES AND BACKFILLED WITH CLEAN FILL.

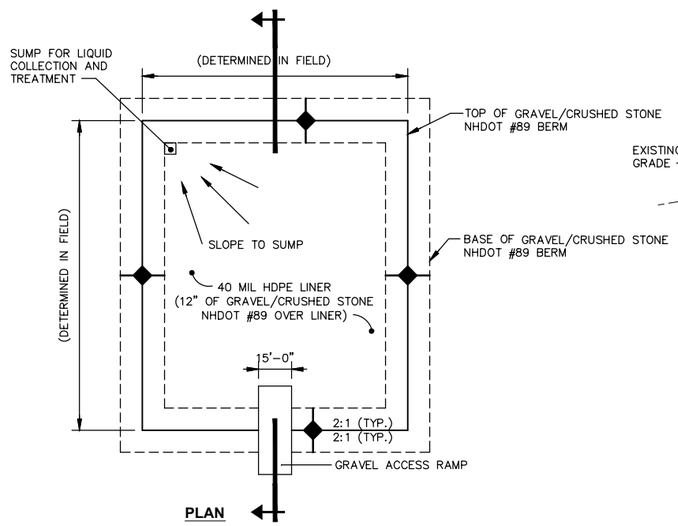


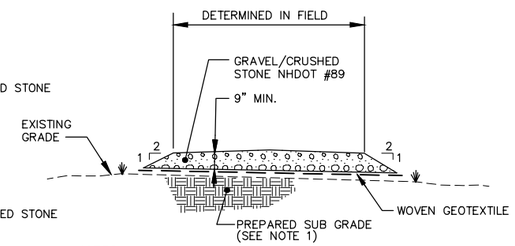
NOTES:

1. THE COMBINATION OF THE STRAW BALE AND SILT FENCE WILL BE USED WHERE DETERMINED NECESSARY TO PROVIDE PROPER SEDIMENT AND EROSION CONTROL.

STRAW BALE/SILT FENCE DETAIL (3)

NOT TO SCALE



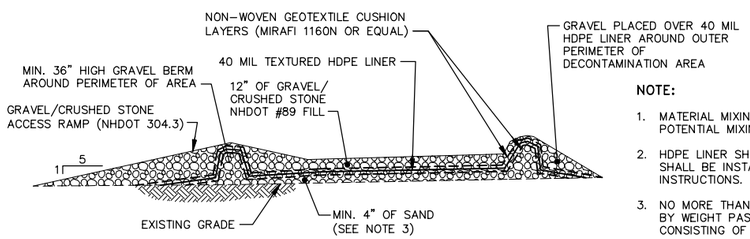


NOTES:

1. EXISTING SURFACE SHALL BE GRADED AND COMPACTED AS REQUIRED TO PLACE MATERIALS.
2. ONLY CLEAN MATERIALS AND EQUIPMENT SHALL BE PLACED WITHIN THIS STAGING CONFIGURATION.
3. FOR CLEAN MATERIAL STAGING AREAS, THE CONTRACTOR SHALL PLACE 10-mil PLASTIC SHEETING OVER THE MATERIALS AND ANCHOR AS APPROPRIATE.
4. THE FINAL LOCATIONS AND SIZES OF THE CLEAN MATERIALS AND EQUIPMENT PADS WILL BE DETERMINED IN THE FIELD BY THE CONTRACTOR.

CLEAN MATERIALS AND EQUIPMENT PAD DETAIL (5)

NOT TO SCALE

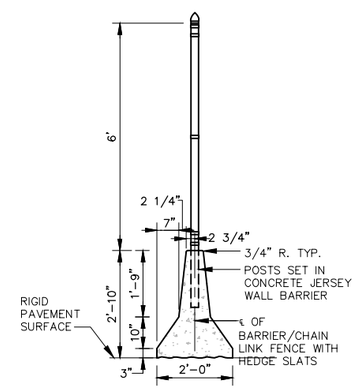


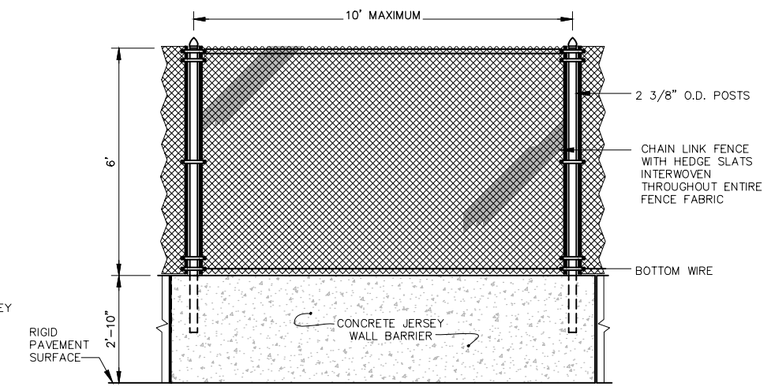
NOTE:

1. MATERIAL MIXING AREA AND DEWATERING AREAS TO BE STAGED TO FACILITATE POTENTIAL MIXING PRIOR TO OFF-SITE DISPOSAL.
2. HDPE LINER SHALL BE MANUFACTURED BY POLYFLEX, GSE, OR EQUAL. LINER SHALL BE INSTALLED AND TESTED IN ACCORDANCE WITH MANUFACTURERS INSTRUCTIONS.
3. NO MORE THAN 30% BY WEIGHT PASSING A #100 SIEVE, NO MORE THAN 12% BY WEIGHT PASSING A #200 SIEVE AND NO MORE THAN 15% BY WEIGHT CONSISTING OF CALCIUM CARBONATE.
4. THE CONTRACTOR MUST MAINTAIN THE 12-INCH GRAVEL LAYER OVER THE HDPE LINER. IF THE SACRIFICIAL GEOTEXTILE IS EXPOSED, MIXING MUST STOP UNTIL THE GRAVEL LAYER IS RESTORED.

TYPICAL MATERIAL STAGING, MIXING, AND DEWATERING AREA DETAIL (4)

NOT TO SCALE





NOTES:

1. JERSEY BARRIERS ARE REQUIRED BETWEEN THE CONSTRUCTION SITE AND ADJACENT ROADS.
2. JERSEY BARRIERS SHOULD BE IN GOOD CONDITION AND CONSISTENT IN SIZE AND QUALITY.
3. BARRIERS WILL HAVE CONSISTENT COLOR OF NATURAL CONCRETE OR WHITE.
4. BARRIERS WILL BE FASTENED TOGETHER WHEREVER PRACTICAL TO PREVENT MOVEMENT.
5. SIDES OF TEMPORARY CONCRETE BARRIERS FACING ROADWAY SHALL HAVE THREE INCH MINIMUM LENGTH YELLOW RETRO-REFLECTORS MOUNTED ON THE TOP OR SIDE OF THE BARRIERS ON 25 FOOT CENTERS. RETRO-REFLECTORS SHOULD BE MOUNTED AT A UNIFORM HEIGHT OF AT LEAST TWO FEET ABOVE THE PAVEMENT OR GROUND SURFACE.
6. TEMPORARY JERSEY WALL BARRIERS WITH CHAIN LINK FENCING (I.E., ALONG MILL AND ELM STREETS) SHALL HAVE CHAIN LINK POSTS SET IN THE CONCRETE WITH 6-FEET OF FENCING FABRIC FASTENED TO THE TOP. GREEN HEDGE SLATS SHALL BE INSERTED BETWEEN THE WEAVES OF THE CHAIN LINKS TO PROVIDE PRIVACY AND ACT AS A NOISE AND DUST BARRIER FOR CONSTRUCTION ACTIVITIES.
7. REFER TO DRAWINGS G-4C AND G-6C FOR LOCATION OF DUST AND SOUND BARRIERS.

CONCRETE JERSEY SHAPE MEDIAN TRAFFIC BARRIER TYPE A WITH CHAIN LINK FENCE WOVEN WITH HEDGE SLATS (6)

0 2' 4'
SCALE: 1/2"=1'-0"

SCALE(S) AS INDICATED

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Professional Engineer's No.: 10767
State: NH | Date Signed: | Project Mgr.: CRA
Designed by: MAM | Drawn by: . | Checked by: .

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ARCADIS U.S., INC.

GENERAL ELECTRIC COMPANY
FLETCHER'S PAINT WORKS AND STORAGE FACILITY SUPERFUND SITE
MILFORD, NEW HAMPSHIRE
FINAL (100%) DESIGN REPORT

SITE PREPARATION DETAILS

ARCADIS Project No. B0020985.0002.00006
Date NOVEMBER 2012

ARCADIS OF NEW YORK
6723 TOWPATH ROAD
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G-25

CITY: SYRACUSE-NY DIV/GROUP: 141/ENV DB: L.POSENAUER, G.STOWELL, L.FORAKER LD: PIC: PM: TM: LYR:ON=*;OFF=*REF*
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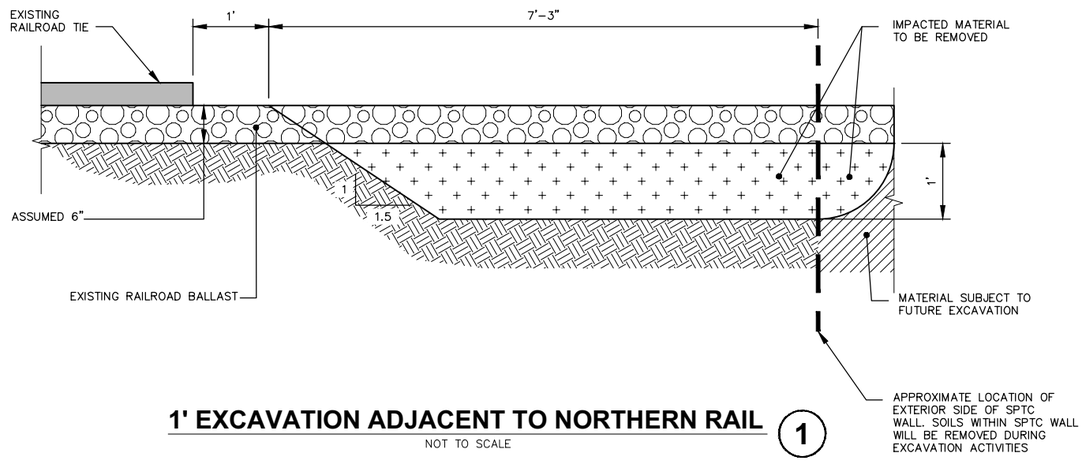
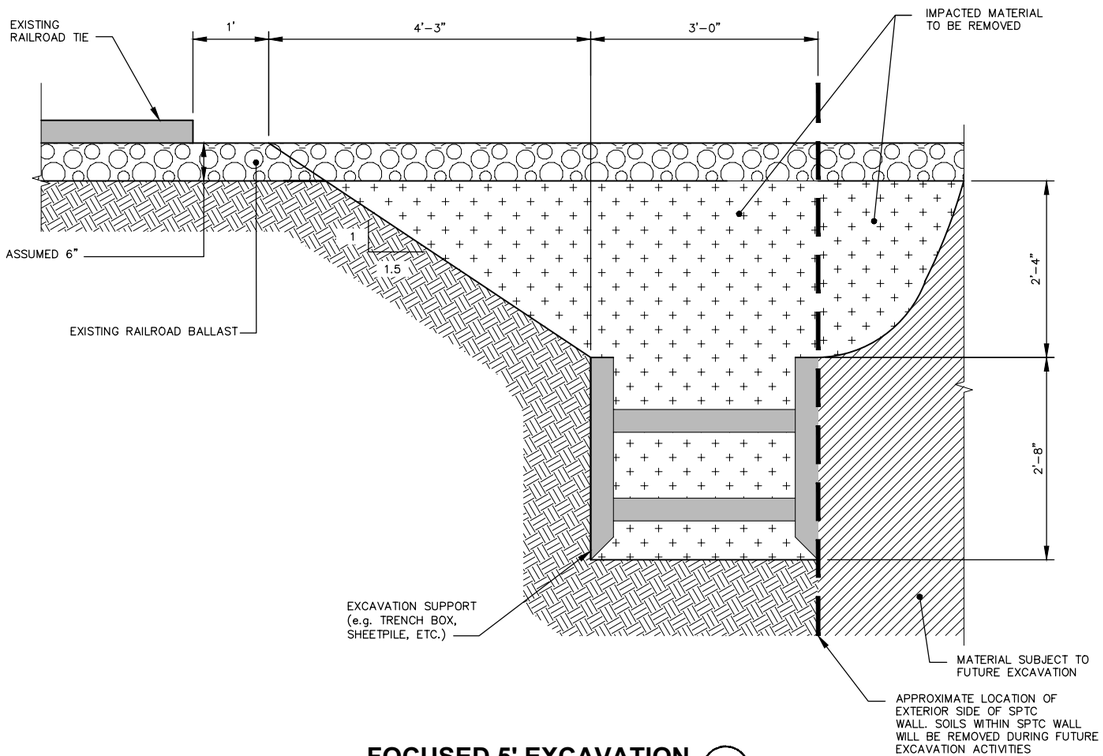


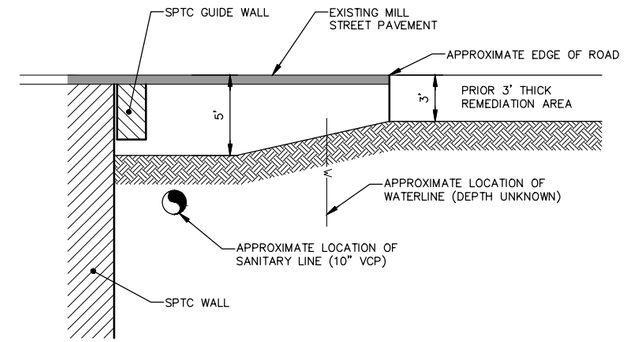
1' EXCAVATION ADJACENT TO NORTHERN RAIL (1)

NOT TO SCALE

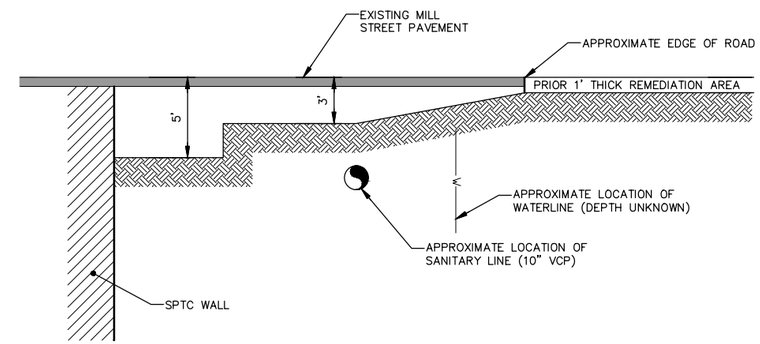


FOCUSED 5' EXCAVATION (2)

NOT TO SCALE



CROSS SECTION A



CROSS SECTION B

NOTE:

1. WHERE FEASIBLE, CONTRACTOR SHALL PROTECT AND MAINTAIN EXISTING UTILITIES. WHEN NOT POSSIBLE, CONTRACTOR SHALL REPLACE (AT ITS SOLE EXPENSE) PORTION OF AFFECTED UTILITY WITH NEW MATERIALS. PROPOSED MATERIALS SHALL BE IN ACCORDANCE WITH TOWN SPECIFICATIONS AND REVIEWED BY GE AND TOWN PRIOR TO PROCUREMENT AND USE.
2. SEE DRAWING G–15 FOR CROSS SECTION LOCATIONS.

TYPICAL MILL STREET EXCAVATION CROSS SECTIONS (3)

NOT TO SCALE

GENERAL NOTES:

1. FINAL DIMENSIONS AND SLOPES ARE SUBJECT TO REVIEW AND APPROVAL OF GUILFORD RAILROAD.
2. FIGURE DOES NOT REPRESENT ACTUAL SURFACE TOPOGRAPHY.

CITY: SYRACUSE-NY DIV/GROUP: 141/ENV DB: DMW GMS LJP B.PITTSLEY G.STOWELL, K.SARTORI PIC:(Opt) PM:(Reqd) TM:(Opt) LYR:(Opt)ON=*;OFF=*REF
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Professional Engineer's Name		
LOWELL W. McBURNEY		
Professional Engineer's No.		
10767		
State	Date Signed	Project Mgr.
NH		CRA
Designed by	Drawn by	Checked by
MAM	.	LAF

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EXCAVATION DETAILS - MILL STREET AREA

ARCADIS Project No. B0020985.0002.00006

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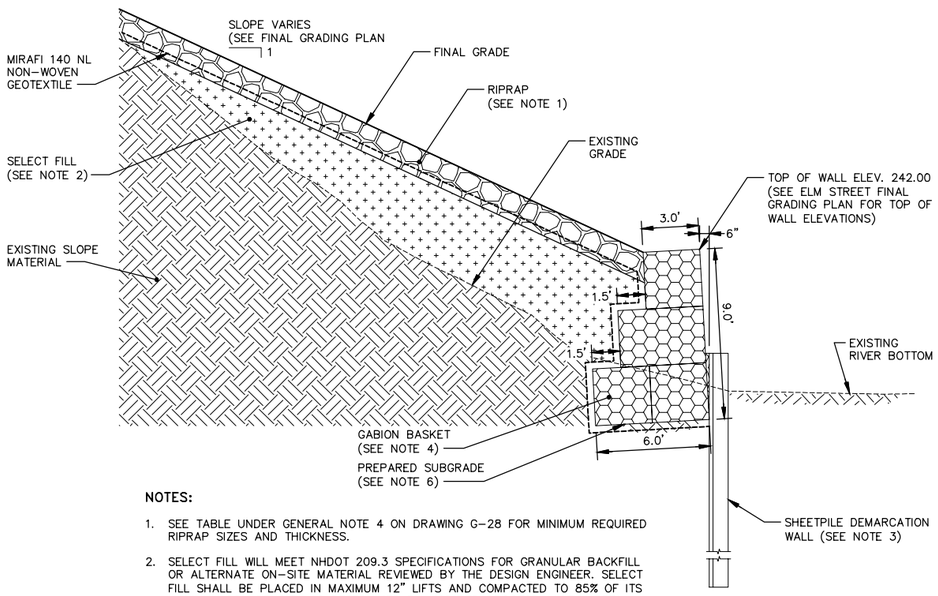
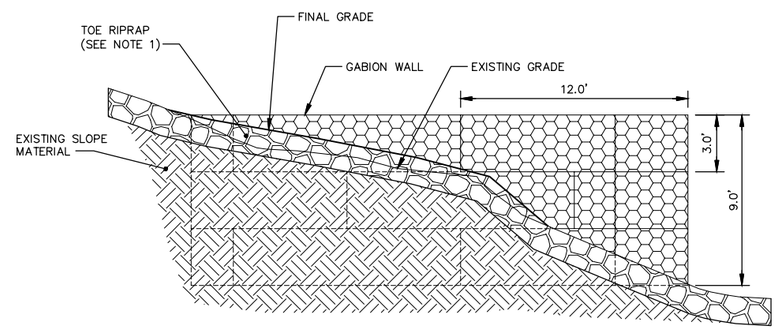


NOTES:

1. SEE TABLE UNDER GENERAL NOTE 4 ON DRAWING G–28 FOR MINIMUM REQUIRED RIPRAP SIZES AND THICKNESS.
2. SELECT FILL WILL MEET NHDOT 209.3 SPECIFICATIONS FOR GRANULAR BACKFILL OR ALTERNATE ON–SITE MATERIAL REVIEWED BY THE DESIGN ENGINEER. SELECT FILL SHALL BE PLACED IN MAXIMUM 12" LIFTS AND COMPACTED TO 85% OF ITS MAXIMUM DRY DENSITY AS DETERMINED BY MODIFIED PROCTOR (ASTM 1557).
3. SHEETPILE DEMARCATION WALL INSTALLED DURING SITE PREPARATION TO REMAIN AFTER REMEDIAL ACTION TO IDENTIFY LIMIT OF OU–1 REMEDIATION. CONTRACTOR TO TRIM SHEETPILE TO APPROXIMATE HEIGHT SHOWN.
4. DETAILS OF GABION WALL ARE GIVEN IN TECHNICAL SPECIFICATIONS.
5. FILL IS TO BE PLACED AFTER CONSTRUCTION OF GABION BASKETS.
6. THE SUBGRADE BELOW THE GABION BASKETS SHALL HAVE A MINIMUM BEARING STRENGTH OF 3000 PSF VERIFIED BY THE ENGINEER PRIOR TO INSTALLATION.

GABION GRAVITY WALL (TYP.) 1

NOT TO SCALE

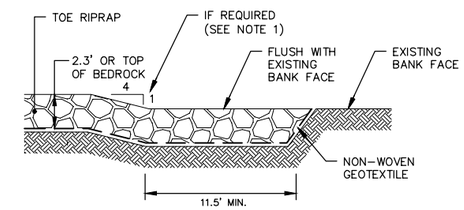


NOTES:

1. SEE TABLE UNDER GENERAL NOTE 4 ON DRAWING G–28 FOR MINIMUM REQUIRED RIPRAP SIZES AND THICKNESS.
2. DETAILS OF GABION WALL ARE GIVEN IN TECHNICAL SPECIFICATIONS.

GABION END DETAIL (TYP.) 2

NOT TO SCALE



NOTES:

1. IF FACE OF RIPRAP BANK PROTECTION IS NOT ALREADY FLUSH WITH FACE OF EXISTING BANK, PROVIDE SMOOTH (i.e., 4:1 OR SMOOTHER) TRANSITION TO EXISTING BANK FACE.
2. DO NOT EXCAVATE BEDROCK TO ACHIEVE RIPRAP DESIGN THICKNESS. CONTRACTOR SHALL COORDINATE WITH ENGINEER AT TIME OF CONSTRUCTION IF SHALLOW BEDROCK IS ENCOUNTERED.
3. SEE TABLE UNDER GENERAL NOTE 4 ON DRAWING G–28 FOR MINIMUM REQUIRED RIPRAP SIZES AND THICKNESS.

RIPRAP BANK PROTECTION - UPSTREAM/DOWNSTREAM END 3

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Professional Engineer's No.: 10767
State: NH | Date Signed: | Project Mgr.: CRA
Designed by: MAM | Drawn by: . | Checked by: .

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MILFORD, NEW HAMPSHIRE
FINAL (100%) DESIGN REPORT

SITE RESTORATION DETAILS - ELM STREET AREA

ARCADIS Project No. B0020985.0002.00006
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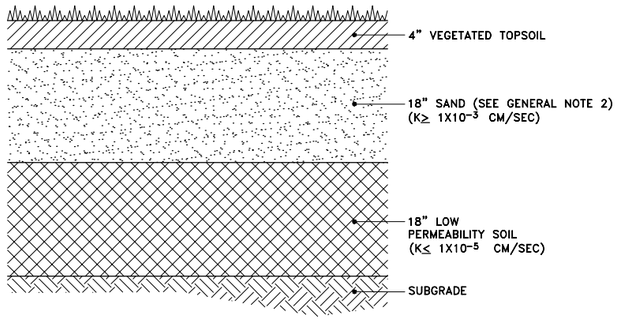
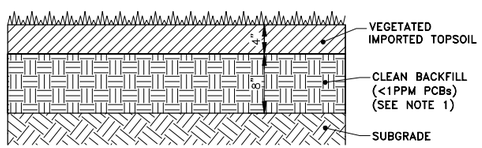


PROPOSED COVER SYSTEM (1)

NOT TO SCALE

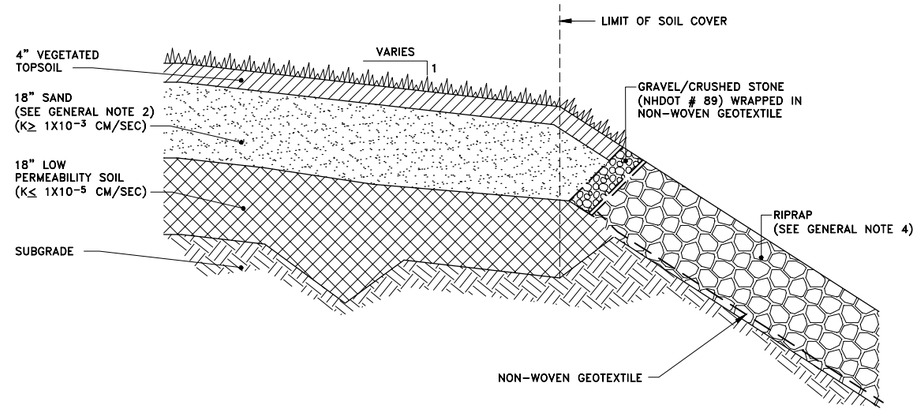


NOTE:

1. VEGETATED COVER TO BE USED AT AREAS RESTORED OUTSIDE OF THE PROPOSED COVER SYSTEM AREA.
2. FOR RESTORATION OF PROPERTIES ON MILL AND ELM STREET, ONLY IMPORTED BACKFILL AND IMPORTED TOPSOIL WILL BE USED.

VEGETATED COVER (2)

NOT TO SCALE



PROPOSED COVER SYSTEM / RIPRAP RIVERBANK SLOPE PROTECTION TIE-IN (3)

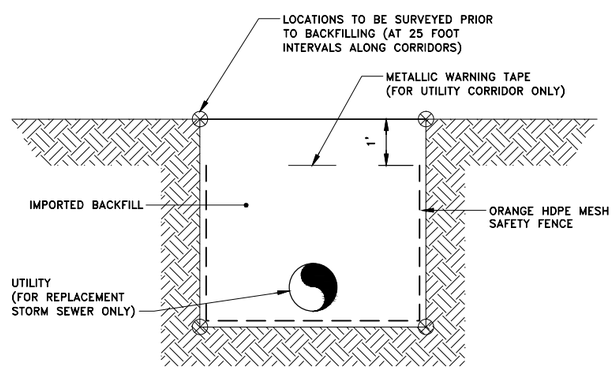
NOT TO SCALE

GENERAL NOTES:

1. SUBGRADE INCLUDES FILLED AND COMPACTED IMPORTED MATERIALS; EXCAVATED AND COMPACTED SOILS FROM NON-REMEDIAL EXCAVATIONS (I.E., SOILS CONTAINING PCB CONCENTRATIONS LESS THAN SCL); AND/OR COMPACTED NATIVE SOIL.
2. NO MORE THAN 30% BY WEIGHT PASSING A #100 SIEVE, NO MORE THAN 12% BY WEIGHT PASSING A #200 SIEVE AND NO MORE THAN 15% BY WEIGHT CONSISTING OF CALCIUM CARBONATE.
3. IN CERTAIN AREAS OF THE SITE, OVEREXCAVATION WILL BE REQUIRED TO INSTALL THE PROPOSED COVER SYSTEM, REPLACEMENT STORM SEWER, STORM WATER RETENTION AREA, AND GABION WALL. IN SUCH INSTANCES, MATERIAL EXCAVATED BEYOND THAT REQUIRED TO MEET THE SOIL CLEANUP LEVELS MUST BE USED AS BACKFILL FOR DEEPER EXCAVATIONS THAT ARE UNDER THE COVER (I.E., NOT IN UTILITY CORRIDORS, TREE PLANTING AREAS AND RIPRAP SLOPES).
4. RIVERBANK RIPRAP SHALL BE ANGULAR ROCK WITH THE FOLLOWING PROPERTIES:

RIPRAP PROPERTIES	MINIMUM REQUIREMENTS	
	BANK RIPRAP (DOWN TO ELEVATION 240.5)	TOE RIPRAP
D_{MIN}	4 IN.	6 IN.
D_{50}	7 IN.	12 IN.
D_{MAX}	11 IN.	18 IN.
LAYER THICKNESS	17 IN.	27 IN.

5. FERTILIZER SHALL NOT BE USED ON TOPSOIL LAYERS AT EITHER SITE.

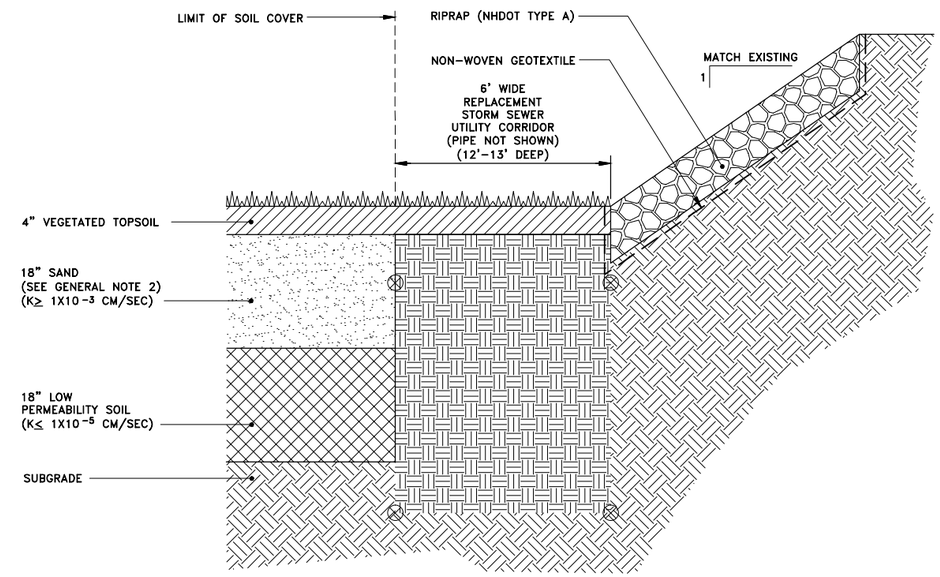


NOTE:

1. ORANGE (HDPE) SAFETY FENCE SHALL BE INSTALLED ALONG THE BOTTOM AND SIDEWALLS OF THE CORRIDOR TO WITHIN ONE FOOT OF FINAL GRADE.

TYPICAL UTILITY / TREE PLANTING CORRIDOR CROSS SECTION (4)

NOT TO SCALE



PROPOSED COVER SYSTEM / PROPOSED UTILITY CORRIDOR / RIPRAP CEMETERY SLOPE PROTECTION TIE-IN (5)

NOT TO SCALE

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Professional Engineer's No.: 10767
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Designed by: MAM | Drawn by: . | Checked by: LAF

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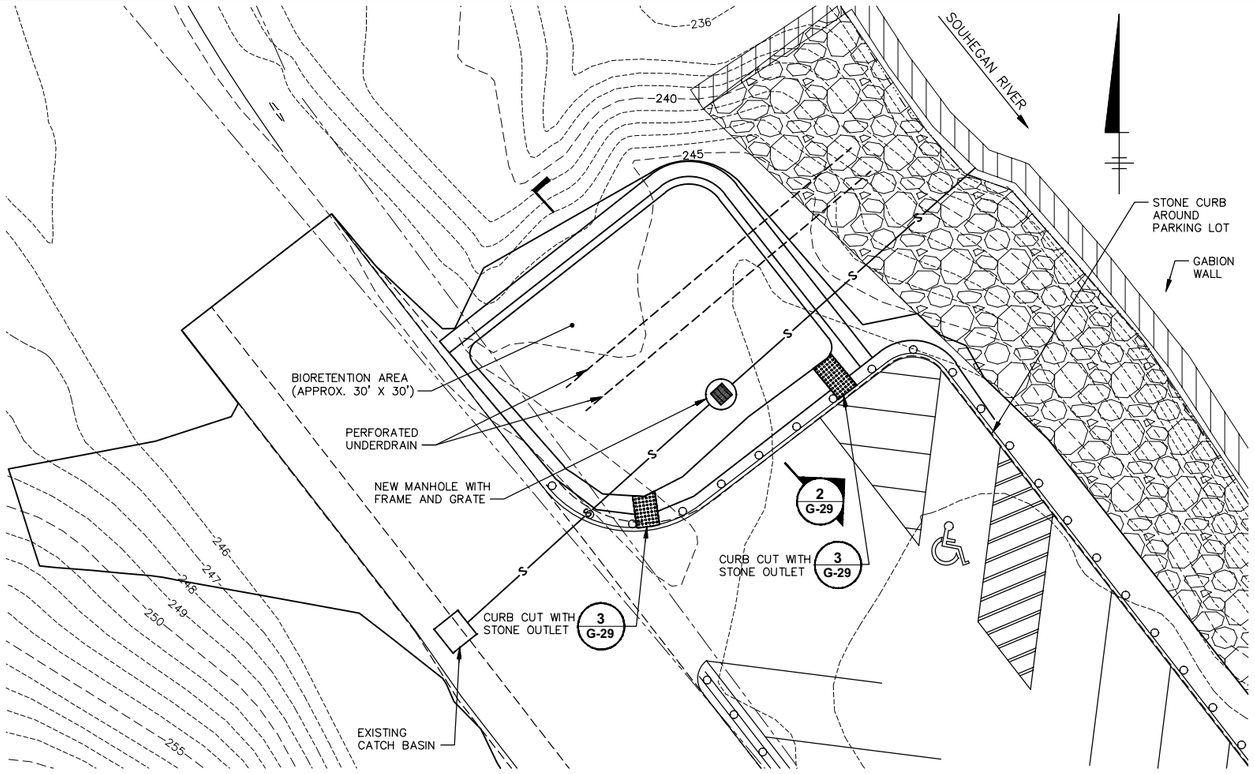

STORMWATER RETENTION AREA PARTIAL PLAN (1)

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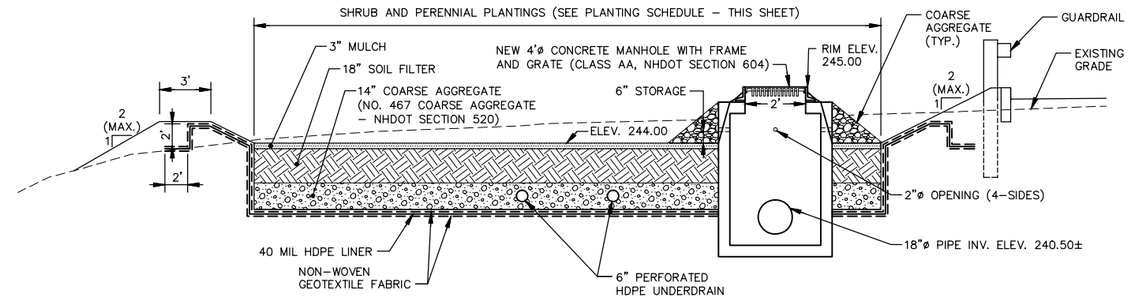
SCALE: 1"=10'



NOTES:

1. 40 MIL HDPE LINER SHALL BE MANUFACTURED BY POLYFLEX, GSE, OR EQUIVALENT. LINER SHALL BE INSTALLED AND TESTED IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.
2. NON-WOVEN GEOTEXTILE SHALL BE 16-OZ MANUFACTURED BY POLYFLEX, GSE, OR EQUIVALENT. NON-WOVEN GEOTEXTILE SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.
3. DRAINAGE STRUCTURE AND PIPING SHALL BE FURNISHED AND INSTALLED PER TOWN OF MILFORD INFRASTRUCTURE DESIGN, CONSTRUCTION, AND ADMINISTRATION STANDARDS.
4. BIORETENTION MULCH AND SOIL FILTER LAYER SHALL BE IN ACCORDANCE WITH TABLE 4-4 OF THE NEW HAMPSHIRE STORMWATER MANUAL, VOLUME 2, POST-CONSTRUCTION BEST MANAGEMENT PRACTICES SELECTION AND DESIGN, DECEMBER 2008.

STORMWATER RETENTION AREA SECTION (2)

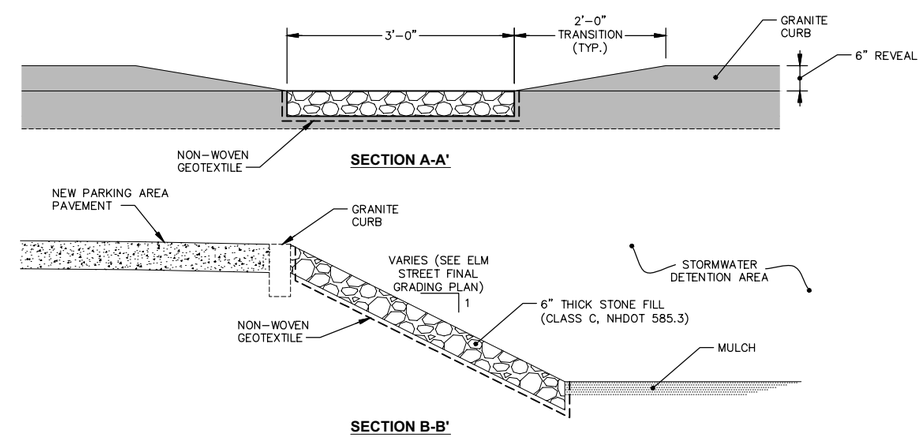
NOT TO SCALE

STORMWATER RETENTION AREA SHRUB AND PERENNIAL PLANTINGS SCHEDULE

COMMON NAME	BOTANICAL NAME	CONTRACT QUANTITY	SPACING
New England Aster	*Aster novae-angliae*	45	2FT
Switch Grass	*Panicum virgatum*	45	2FT
Coneflower	*Echinacea purpurea*	45	2FT
Columbine	*Aquilegia canadensis*	45	2FT
Sneezeweed	*Helenium autumnale*	45	2FT
Highbush Blueberry	*Vaccinium corymbosum*	15	5FT
Steeplebush	*Spiraea tomentosa*	15	5FT

NOTE:

1. PERENNIAL PLANTINGS SHALL BE NATIVE, NON-INVASIVE SPECIES AND SHOULD BE DROUGHT TOLERANT, NATURAL PLANT LAYOUT AND PROVIDE TREES/SHRUBS ALONG PERIMETER.



TYPICAL CURB CUT WITH STONE OUTLET (3)

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Professional Engineer's No.: 10767
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Designed by: MAM | Drawn by: | Checked by:

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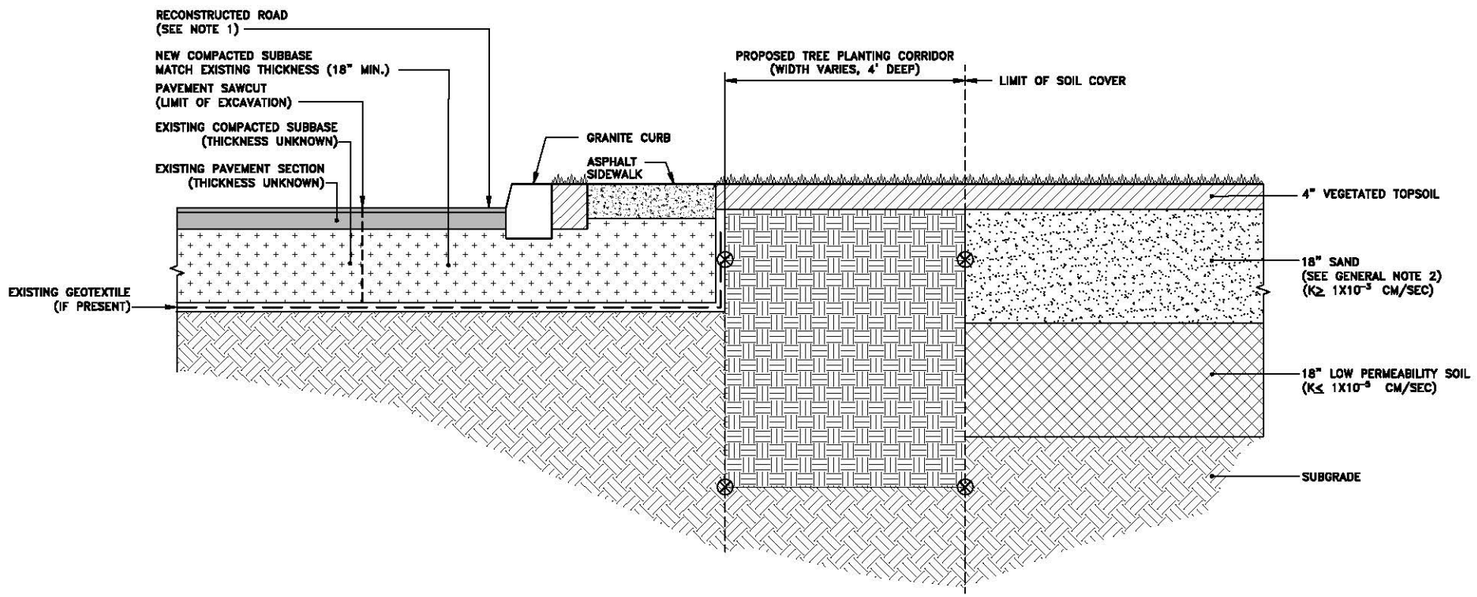

NOTES:

1. ROAD SHALL BE RECONSTRUCTED TO MEET CURRENT NHDOT SPECIFICATIONS (SEE DRAWING T-5).
2. PROPOSED WOVEN GEOTEXTILE SHALL BE CONTINUOUSLY SEWN TO EXISTING GEOTEXTILE (IF PRESENT) TO THE EXTENT PRACTICABLE.

ELM STREET / PROPOSED TREE PLANTING CORRIDOR / PROPOSED COVER SYSTEM TIE-IN (1)

NOT TO SCALE

CITY: SYRACUSE-NY DIV/GROUP: 141/ENV DB: DMW GMS LJP B.PITTSLEY G.STOWELL, K.SARTORI PIC:(Opt) PM:(Reqd) TM:(Opt) LYR:(Opt)ON=*;OFF=*REF
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Professional Engineer's Name: LOWELL W. McBURNEY
Professional Engineer's No.: 10767
State: NH | Date Signed: | Project Mgr.: CRA
Designed by: MAM | Drawn by: . | Checked by: LAF

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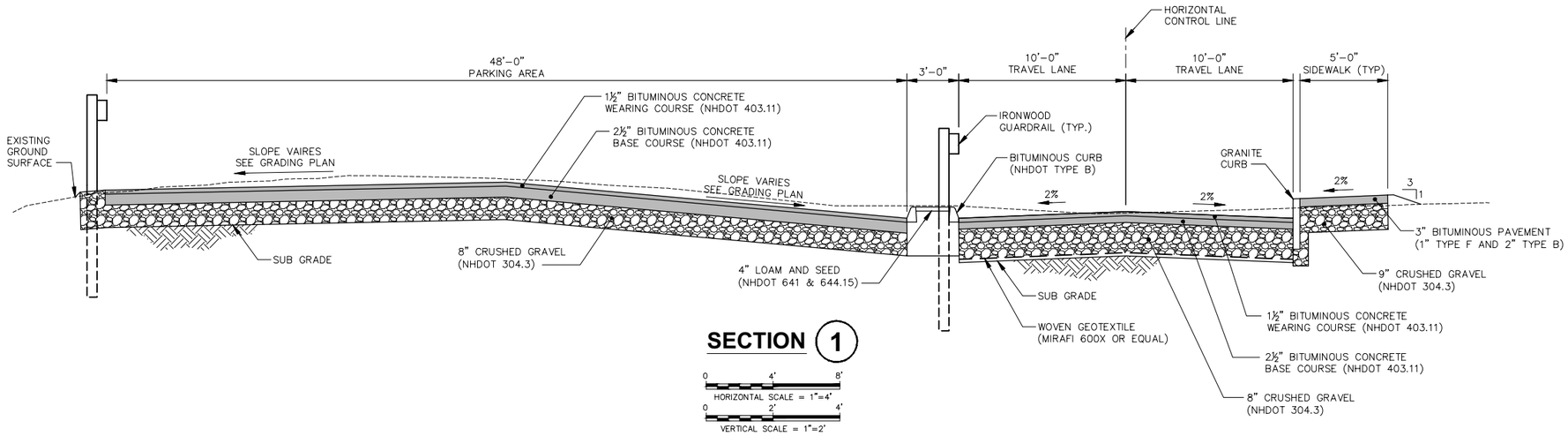
ARCADIS
ARCADIS U.S., INC.

GENERAL ELECTRIC COMPANY
FLETCHER'S PAINT WORKS AND STORAGE FACILITY SUPERFUND SITE
MILFORD, NEW HAMPSHIRE
FINAL (100%) DESIGN REPORT

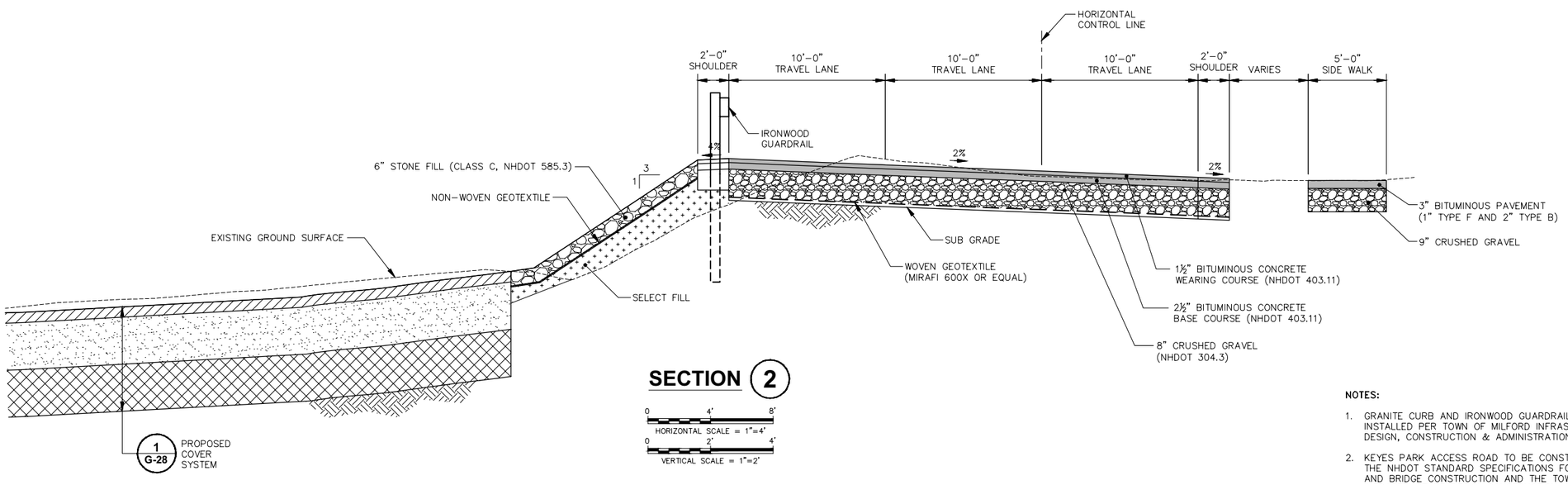
SITE RESTORATION DETAIL - ELM STREET AREA

ARCADIS Project No. B0020985.0002.00006
Date NOVEMBER 2012
ARCADIS OF NEW YORK
6723 TOWPATH ROAD
P.O. BOX 66
SYRACUSE, NEW YORK
TEL. 315.446.9120

G-30



SECTION 1



SECTION 2

NOTES:

1. GRANITE CURB AND IRONWOOD GUARDRAIL SHALL BE INSTALLED PER TOWN OF MILFORD INFRASTRUCTURE DESIGN, CONSTRUCTION & ADMINISTRATION STANDARDS.
2. KEYES PARK ACCESS ROAD TO BE CONSTRUCTED PER THE NHDOT STANDARD SPECIFICATIONS FOR ROADWAYS AND BRIDGE CONSTRUCTION AND THE TOWN OF MILFORD INFRASTRUCTURE DESIGN,CONSTRUCTION & ADMINISTRATION STANDARDS.

CITY: SYRACUSE DIV/GROUP: ENVCAD DB: L. POSENAUER G. STOWELL L. FORAKER LD: PIC: P. FARR PM: C. AVERILL TM: C. AVERILL LYR: ON=*; OFF=*REF*
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Professional Engineer's Name: **LOWELL W. McBURNEY**
Professional Engineer's No.: 10767
State: NH | Date Signed: | Project Mgr.: CRA
Designed by: MAM | Drawn by: | Checked by:

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GENERAL ELECTRIC COMPANY
FLETCHER'S PAINT WORKS AND STORAGE FACILITY SUPERFUND SITE
MILFORD, NEW HAMPSHIRE
FINAL (100%) DESIGN REPORT

RESTORATION DETAILS - KEYES DRIVE AND ELM STREET AREA

ARCADIS Project No. B0020985.0002.00006
Date NOVEMBER 2012

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G-31

GENERAL NOTES:

1. ELEVATIONS BASED ON NORTH AMERICAN VERTICAL DATUM OF 1988. SURVEY CONTROL INFORMATION PROVIDED IN TECHNICAL SPECIFICATIONS.

2. HORIZONTAL DATUM BASED ON NEW HAMPSHIRE STATE PLANE COORDINATE SYSTEM OF 1983.

3. CONTOUR INTERVAL = 1 FOOT.

4. BASEMAP COMPILED FROM ACTUAL FIELD SURVEY PERFORMED BY BBL, INC. FROM JULY 16, 2003 THROUGH AUGUST 14, 2003, MERIDAN LAND SERVICES, INC. ON JANUARY 22, 2004, AND BY ARCADIS ON MAY 24, 2007.

5. KEYES PARK PROPERTY LINES SHOWN WERE ESTABLISHED FROM DEEDS OF RECORD, SURVEY, AND EXISTING MONUMENTATION. OTHER PROPERTY LINES SHOWN WERE OBTAINED FROM TOWN OF MILFORD TAX MAP 19.

6. MILL STREET AREA PROPERTY LINES SHOWN WERE ESTABLISHED FROM DEEDS OF RECORD, SURVEY, AND EXISTING MONUMENTATION. OTHER PROPERTY LINES SHOWN WERE OBTAINED FROM TOWN OF MILFORD TAX MAP 25.

7. ELM STREET AREA PROPERTY LINES SHOWN WERE ESTABLISHED FROM DEEDS OF RECORD, SURVEY, AND EXISTING MONUMENTATION. OTHER PROPERTY LINES SHOWN WERE OBTAINED FROM TOWN OF MILFORD TAX MAP 25.

8. DIFFERENCES NOTED BY THE CONTRACTOR BETWEEN BASE MAP INFORMATION AND ACTUAL SITE CONDITIONS THAT MAY AFFECT THE DESIGN CONFIGURATION SHALL BE SUBMITTED TO THE ENGINEER IN WRITING. MODIFICATIONS MAY ONLY BE MADE TO THE DESIGN CONFIGURATION DURING PERFORMANCE OF THE SITE WORK WITH THE APPROVAL BY THE GENERAL ELECTRIC COMPANY.

9. THE CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE LAWS, ORDINANCES, RULES, REGULATIONS, AND ORDERS OF PUBLIC BODIES HAVING JURISDICTION FOR THE SAFETY OF PERSONS OR PROPERTY OR TO PROTECT THEM FROM DAMAGE, INJURY, OR LOSS, INCLUDING, WITHOUT LIMITATION, THE DEPARTMENT OF LABOR SAFETY AND HEALTH REGULATIONS FOR CONSTRUCTION PROMULGATED UNDER THE OCCUPATIONAL SAFETY AND HEALTH ACT OF 1970 (PL 91-596) AND UNDER SECTION 107 OF THE CONTRACT WORK HOURS AND SAFETY STANDARDS ACT (PL 91-54) AND AMENDMENTS THERETO. THE CONTRACTOR SHALL COMPLY WITH THE REQUIREMENTS SET FORTH UNDER 29 CFR 1910, 29 CFR 1926, AND THE MINIMUM REQUIREMENTS OF ITS HEALTH AND SAFETY PLAN. THE CONTRACTOR SHALL ERECT AND MAINTAIN, AS REQUIRED BY THE CONDITIONS AND THE PROGRESS OF THE WORK, ALL NECESSARY SAFEGUARDS FOR THE SAFETY AND PROTECTION OF PERSONS AND PROPERTY AND SHALL COMPLY WITH ALL APPLICABLE RECOMMENDATIONS OF THE MANUAL OF ACCIDENT PREVENTION IN CONSTRUCTION OF THE ASSOCIATED GENERAL CONTRACTORS OF AMERICA INC. THE CONTRACTOR SHALL ALSO COMPLY WITH ALL APPLICABLE U.S. COAST GUARD LAWS, ORDINANCES, RULES, AND REGULATIONS ASSOCIATED WITH WORKING WITHIN/ADJACENT TO A NAVIGABLE WATERWAY.

10. THE CONTRACTOR SHALL COORDINATE SITE ACTIVITIES TO AVOID INFRINGEMENT UPON NORMAL TRAFFIC FLOW ON ADJACENT ROADWAYS.

11. THE CONTRACTOR SHALL OBSERVE ALL EXISTING ROAD/BRIDGE WEIGHT LIMITS/RESTRICTIONS WHEN HAULING MATERIALS AND/OR TRANSPORTING HEAVY EQUIPMENT TO AND FROM THE SITE.

12. CONTRACTOR SHALL BE RESPONSIBLE FOR COMPLYING WITH ALL PROVISIONS OF THE RIGHT-OF-ENTRY AGREEMENTS EXECUTED BETWEEN THE GENERAL ELECTRIC COMPANY AND APPLICABLE PROPERTY OWNERS.

13. IT IS THE CONTRACTOR'S RESPONSIBILITY TO COORDINATE ALL NECESSARY TRAFFIC CONTROLS AND OBTAIN ALL NECESSARY LOCAL PERMITS (OR, FOR SITE WORK, IDENTIFY AND COMPLY WITH ALL SUBSTANTIVE REQUIREMENTS) THAT MY BE REQUIRED TO PERFORM THE WORK.

14. THE CONTRACTOR SHALL PLACE AND MAINTAIN EQUIPMENT AND MATERIALS IN A NEAT AND WORKMANLIKE MANNER.

15. THE CONTRACTOR SHALL FURNISH AND PLACE PROPER GUARDS FOR PREVENTION OF ACCIDENTS, PROVIDE ALL DUST/FUME PROTECTION, MECHANICAL/ELECTRICAL PROTECTION, SPECIAL GROUNDING, SAFETY RAILINGS, BARRIERS, OR OTHER SAFETY FEATURES, AS REQUIRED.

16. LOCATIONS OF UNDERGROUND UTILITIES AND STRUCTURES ARE APPROXIMATE AND NOT ALL SURFACE/SUBSURFACE SITE FEATURES MAY BE SHOWN. THE CONTRACTOR SHALL VERIFY THE LOCATIONS OF ALL (SHOWN OR NOT SHOWN) ABOVE- AND BELOW-GROUND UTILITIES AND STRUCTURES THAT MAY EXIST WITHIN THE PROJECT LIMITS PRIOR TO COMMENCEMENT OF WORK AND PROTECT SUCH UTILITIES/STRUCTURES UNLESS OTHERWISE NOTED.

17. THE CONTRACTOR SHALL COORDINATE WITH THE APPROPRIATE UTILITY COMPANIES AND GE/GE'S REPRESENTATIVE FOR THE IDENTIFICATION OF UTILITIES IN THE WORK AREAS AND TEMPORARY PROTECTION OF (AND/OR REMOVAL AND REPLACEMENT, AS NECESSARY, AS DETERMINED BY THE APPROPRIATE UTILITY COMPANY) ANY UTILITY POLES, GUY WIRES, UNDERGROUND UTILITIES, AND/OR OVERHEAD WIRES THAT FALL WITHIN THE LIMITS OF EXCAVATION.

18. THE CONTRACTOR SHALL TAKE ALL APPROPRIATE MEASURES TO AVOID DAMAGE TO STRUCTURES THAT ARE NOT SUBJECT TO REMOVAL AND REPLACEMENT AS PART OF THIS CONTRACT. THE CONTRACTOR SHALL REPAIR ANY STRUCTURAL OR EXTERNAL DAMAGES TO SUCH STRUCTURES AT NO ADDITIONAL COST TO GE.

19. IT IS THE CONTRACTOR'S RESPONSIBILITY TO ESTABLISH, MAINTAIN, AND PROTECT THE PROJECT LIMITS AS PART OF THIS CONTRACT. A SECURE SITE IS TO BE MAINTAINED AT ALL TIMES. THE CONTRACTOR SHALL INSTALL TEMPORARY FENCING AND WARNING SIGNS ALONG THE APPROXIMATE LIMITS OF WORK (OR USE EXISTING, AS APPROPRIATE) AS NECESSARY TO PREVENT PEDESTRIAN OR OTHER UNAUTHORIZED PERSONNEL FROM ACCESSING THE WORK SITE.

20. THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS FOR THE SAFETY OF, AND SHALL PROVIDE THE NECESSARY PRECAUTION TO PREVENT DAMAGE, INJURY, OR LOSS TO, ALL EMPLOYEES AND PROPERTY DURING THE WORK AND ALL OTHER PERSONS OR PROPERTY THAT MAY BE AFFECTED THEREBY.

21. THE CONTRACTOR IS RESPONSIBLE FOR ESTABLISHING AND MAINTAINING SURVEY CONTROL TO VERIFY EXISTING (PRE-CONSTRUCTION) GRADES, POST-EXCAVATION ELEVATIONS/DEPTHS AND FINAL (RESTORED) GRADES. THE ENGINEER WILL IDENTIFY LOCATION(S) AND ELEVATION(S) OF SUITABLE BENCHMARKS TO BE USED FOR SURVEY CONTROL. THE CONTRACTOR MUST PROVIDE SURVEY (FOR VERIFICATION BY GE/GE'S REPRESENTATIVE) PRIOR TO INITIATING SUBSEQUENT PHASES OF WORK (E.G., BACKFILLING EXCAVATIONS, ETC.). ANY REWORK REQUIRED DUE TO LACK OF SURVEY VERIFICATION BY GE/GE'S REPRESENTATIVE WILL BE AT NO ADDITIONAL COST TO GE.

22. THE HORIZONTAL LIMITS OF EXCAVATION ACTIVITIES SHALL BE PHYSICALLY DELINEATED IN THE FIELD BY THE CONTRACTOR. WITHIN THESE LIMITS, THE CONTRACTOR SHALL BE RESPONSIBLE FOR PERFORMING THE EXCAVATION ACTIVITIES IN ACCORDANCE WITH OSHA REQUIREMENTS AND VERIFYING (BY SURVEY FOR APPROVAL BY GE/GE'S REPRESENTATIVE) THE SPECIFIED DEPTH OR ELEVATION OF EXCAVATION PRIOR TO BACKFILLING EXCAVATIONS.

23. SILT FENCING AND OTHER SEDIMENT AND EROSION CONTROL MEASURES SHALL BE ESTABLISHED AND MAINTAINED BY THE CONTRACTOR AS APPROPRIATE TO CONTROL SEDIMENT/ PARTICULATE OFF-SITE MIGRATION. THE FINAL LOCATIONS OF THESE CONTROLS WILL BE DETERMINED AND/OR MODIFIED IN THE FIELD BASED ON SITE-SPECIFIC CONSIDERATIONS RELATED TO DRAINAGE, TOPOGRAPHY, EXCAVATION SEQUENCING, ETC.

24. ALL OPERATIONAL INLET STRUCTURES, WITHIN OR DOWNGRADIENT OF THE LIMITS OF WORK (CATCH BASINS, MANHOLES, ETC.) SHALL BE PROTECTED DURING THE CONSTRUCTION ACTIVITIES. ADEQUATE MEASURES SHALL BE INSTALLED TO PREVENT SILT AND SEDIMENT FROM ENTERING THE INLET STRUCTURES.

25. THE CONTRACTOR SHALL CONTROL DUST, VAPORS, AND ODORS THAT RESULT FROM THE REMEDIAL ACTIVITIES TO MEET ESTABLISHED AMBIENT STANDARDS.

26. THE CONTRACTOR SHALL PROVIDE DUST SUPPRESSION (e.g. WATER TRUCK, ETC.), AS NECESSARY WITHIN SOIL EXCAVATION, STAGING, AND LOADING AREAS. THESE AREAS SHALL BE WATERED BASED ON VISUAL OBSERVATIONS, THE RESULTS OF PERIMETER AIR MONITORING ACTIVITIES, AND/OR DIRECTION BY GE OR GE'S REPRESENTATIVE. IF FOLLOWING MEASURES TO MITIGATE WINDBORNE MIGRATION OF PARTICULATE MATTER, DUST FROM THE WORK ZONE IS STILL VISIBLY AIRBORNE, THE CONTRACTOR SHALL IMMEDIATELY DISCONTINUE OPERATIONS UNTIL SUCH MEASURES ARE EFFECTIVE, OR CONDITIONS CHANGE SUCH THAT WINDBORNE MIGRATION OF PARTICULATES CEASES.

27. THE CONTRACTOR SHALL REMOVE AND PROPERLY DISPOSE OF ALL ABOVEGROUND DEBRIS, BRUSH, LOGS, TREES, STUMPS, REFUSE, AND RUBBISH FROM WITHIN THE PROJECT LIMITS, AS REQUIRED TO PERFORM THE WORK. ABOVE-GROUND PORTIONS OF ITEMS SUBJECT TO REMOVAL AND REPLACEMENT TO ACCOMMODATE EXCAVATION ACTIVITIES (E.G., FENCING, ETC.) MAY BE SALVAGED FOR REUSE WITH APPROVAL BY GE. APPROVED SALVAGED MATERIALS MAY BE USED WHEN RECONSTRUCTING THESE ITEMS. BELOW-GRADE COMPONENTS AND/OR COMPONENTS THAT HAVE CONTACTED SOILS SUBJECT TO EXCAVATION SHALL BE HANDLED AND DISPOSED OF WITH THE ASSOCIATED SOILS. ALL SUCH ITEMS SHALL BE BROKEN INTO SUFFICIENTLY SMALL PIECES (IF NECESSARY) TO BE ACCEPTABLE FOR OFF-SITE TRANSPORT AND DISPOSAL WITH THE SOILS. BELOW-GRADE COMPONENTS SHALL BE REPLACED AS PART OF SITE RESTORATION ACTIVITIES.

28. EXCAVATION LIMITS SHOWN ON THE DRAWINGS REPRESENT SOILS THAT REQUIRE REMOVAL TO ACHIEVE THE SITE-SPECIFIC SOIL CLEANUP LEVELS. ADDITIONAL REMOVAL (BEYOND THAT SHOWN) MAY BE REQUIRED TO FACILITATE CONSTRUCTION ACCESS, RESTORATION, ETC.

29. CERTAIN MATERIALS SUBJECT TO EXCAVATION AND HANDLING CONTAIN PCBs AND POTENTIALLY CONTAIN OTHER HAZARDOUS CONSTITUENTS AND SHOULD BE HANDLED/TRANSPORTED IN ACCORDANCE WITH APPLICABLE REGULATIONS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DEVELOPING AND IMPLEMENTING APPROPRIATE HEALTH AND SAFETY MEASURES FOR ITS EMPLOYEES AND SUBCONTRACTORS.

30. THE CONTRACTOR MAY CONSTRUCT TEMPORARY STOCKPILES FOR EXCAVATED MATERIALS AT AREAS AND OF VOLUMES APPROVED BY GE/GE'S REPRESENTATIVE. THE CONTRACTOR WILL BE RESPONSIBLE FOR ESTABLISHING AND MAINTAINING PERIMETER EROSION AND SEDIMENT CONTROL MEASURES (IN THE FORM OF SILT FENCING AND/OR HAY BALES WHERE APPROPRIATE), RUN-ON/RUN-OFF WATER COLLECTION AND CONTROL MEASURES, AND DUST SUPPRESSION MEASURES IN STOCKPILE AREAS. THE CONTRACTOR MAY STOCKPILE EXCAVATED MATERIALS IN TWO DISTINCT TYPES OF TEMPORARY STOCKPILE AREAS: OUTSIDE AREAS SUBJECT TO FUTURE EXCAVATION AND WITHIN AREAS SUBJECT TO FUTURE EXCAVATION. TSCA AND/OR RCRA MATERIALS MAY BE PLACED IN LINED, BERMED STOCKPILES DIRECTLY ON TOP OF MATERIALS SUBJECT TO FUTURE EXCAVATION WITH SIMILAR TSCA/RCRA CHARACTERISTICS. NON-TSCA/NON-RCRA MATERIALS MAY BE PLACED IN LINED, BERMED STOCKPILES LOCATED OUTSIDE AREAS SUBJECT TO FUTURE EXCAVATION. SUCH SOILS MAY ALSO BE STOCKPILED DIRECTLY ON TOP OF MATERIALS SUBJECT TO FUTURE EXCAVATION WITH SIMILAR NON-TSCA/NON-RCRA CHARACTERISTICS. HEAVY-DUTY TARPS (MEETING THE GENERAL REQUIREMENTS OF 40 CFR 761.65(c)(9)) MUST BE PLACED OVER ALL EXTERIOR STOCKPILES WHEN ACTIVE STOCKPILING OR LOADING OF MATERIALS IS NOT ONGOING.

31. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING THE TRANSPORTATION OF ALL EXCAVATED/REMOVED MATERIALS (BY OTHERS) TO AN APPROPRIATE OFF-SITE DISPOSAL FACILITY(IES).

32. THE CONTRACTOR SHALL INSTALL AN INTERIM COVER (E.G., POLYETHYLENE SHEETING) OVER WORK AREAS WHERE EXCAVATION ACTIVITIES HAVE BEEN INITIATED BUT ARE NOT YET COMPLETED. THE INTERIM COVER SHALL BE PROPERLY ANCHORED TO RESIST WIND FORCES AND PREVENT STORM WATER FROM ENTERING SUCH WORK AREAS.

33. PAVEMENT SUBJECT TO PARTIAL REMOVAL SHALL BE REMOVED VIA SAW-CUT. RESTORATION SHALL MEET ALL LOCAL AND/OR STATE BUILDING CODES.

34. UPON BACKFILLING OF EXCAVATED AREAS, THE CONTRACTOR SHALL MAINTAIN IN PLACE OR INSTALL ADDITIONAL EROSION CONTROLS IN THE LOCATIONS INDICATED ON THE DRAWINGS. THE EROSION CONTROLS SHALL BE REMOVED BY THE CONTRACTOR WHEN REQUESTED BY GE OR GE'S REPRESENTATIVE.

35. BACKFILLED AND RESTORED AREAS WILL BE SUBJECT TO FINAL SURVEY VERIFICATION (BY THE CONTRACTOR). THE CONTRACTOR SHALL REPAIR/REPLACE ANY ITEMS THAT ARE NOT RESTORED TO THE LOCATIONS AND/OR ELEVATIONS REQUIRED BY THIS CONTRACT.

36. THE CONTRACTOR SHALL RESTORE TO PRE-REMEDIATION CONDITIONS ALL SUPPORT AREAS THAT ARE IMPACTED BY REMEDIATION ACTIVITIES, INCLUDING EQUIPMENT AND MATERIALS STORAGE AREAS, SOIL LOADING AND STAGING AREAS, AND PARKING AREAS.

37. ACCESS ROADS, CONCRETE SURFACES, AND/OR OTHER ITEMS SUBJECT TO REMOVAL AND REPLACEMENT SHALL BE RECONSTRUCTED TO SIMILAR DIMENSIONS AND APPEARANCE AS THE ORIGINAL ITEM. RESTORATION SHALL MEET ALL LOCAL AND/OR STATE BUILDING CODES.

38. ALL EQUIPMENT CONTACTING IMPACTED SOILS SHALL BE CLEANED PRIOR TO USE OR STORAGE ELSEWHERE ON THE SITE, HANDLING OF CLEAN MATERIALS, OR TRANSPORT OFF-SITE. A CONTAINED/LINED EQUIPMENT CLEANING AREA SHALL BE PROVIDED BY THE CONTRACTOR FOR CLEANING DRILLING EQUIPMENT PRIOR TO REMOVAL FROM THE WORK SITE. WATER USED TO CLEAN EQUIPMENT SHALL BE RESTRICTED TO AND COLLECTED WITHIN A DESIGNATED EQUIPMENT CLEANING AREA. ALL SUCH WATERS SHALL BE CONTAINERIZED AND TRANSPORTED FOR APPROPRIATE OFF-SITE DISPOSAL/TREATMENT BY THE CONTRACTOR.

39. THE DRAWINGS MAY NOT INDICATE ALL SURFACE FEATURES SUBJECT TO REPLACEMENT AS PART OF SITE RESTORATION ACTIVITIES. THIS WILL NOT RELIEVE THE CONTRACTOR FROM REMOVING AND REPLACING (IF NECESSARY) ANY AND ALL SUCH ITEMS AT NOT ADDITIONAL COST TO GE.

CITY: SYRACUSE DIV/GROUP: ENVCAD DB: S. KOWALCZYK L. FORAKER LD: PIC: P. FARR PM: C. AVERILL TM: C. AVERILL LYR: ON=*; OFF=*REF*
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Designed by: MAM | Drawn by: | Checked by:

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FINAL (100%) DESIGN REPORT

GENERAL NOTES

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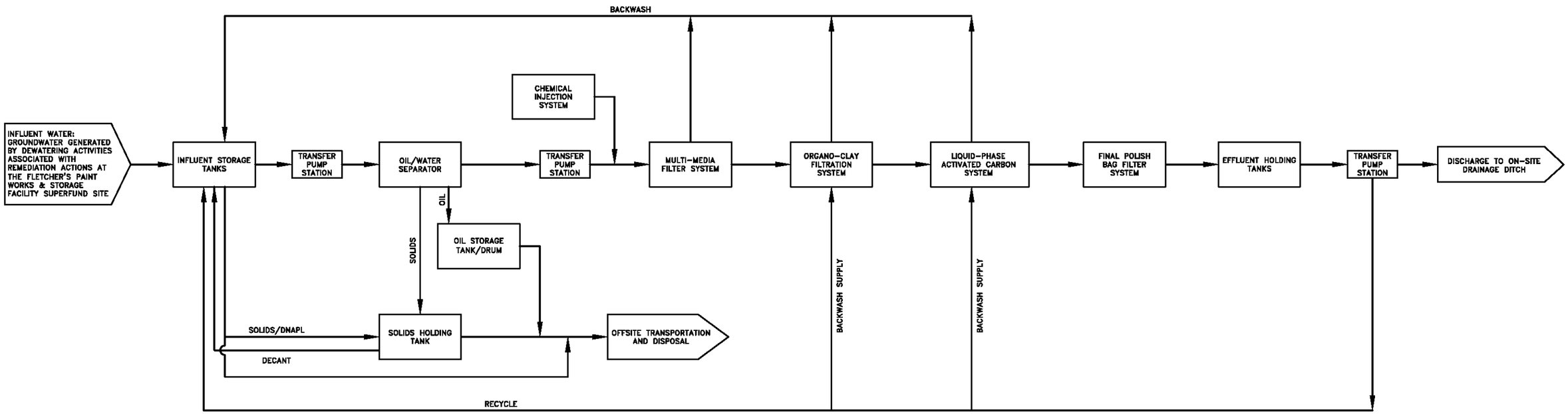

NOTES:

1. ALL WATER LINES EXCEPT WHERE NOTED.
2. MAXIMUM FLOW RATE OF SYSTEM IS 150 GPM.
3. ON-SITE DRAINAGE DITCH SHALL BE PROTECTED BY ROCK-ARMORING TO PREVENT EROSION.

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Designed by: MAM | Drawn by: . | Checked by: .

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FINAL (100%) DESIGN REPORT

TEMPORARY WATER TREATMENT SYSTEM - PROCESS FLOW DIAGRAM - MILL STREET AREA

ARCADIS Project No. B0020985.0002.00006
Date NOVEMBER 2012
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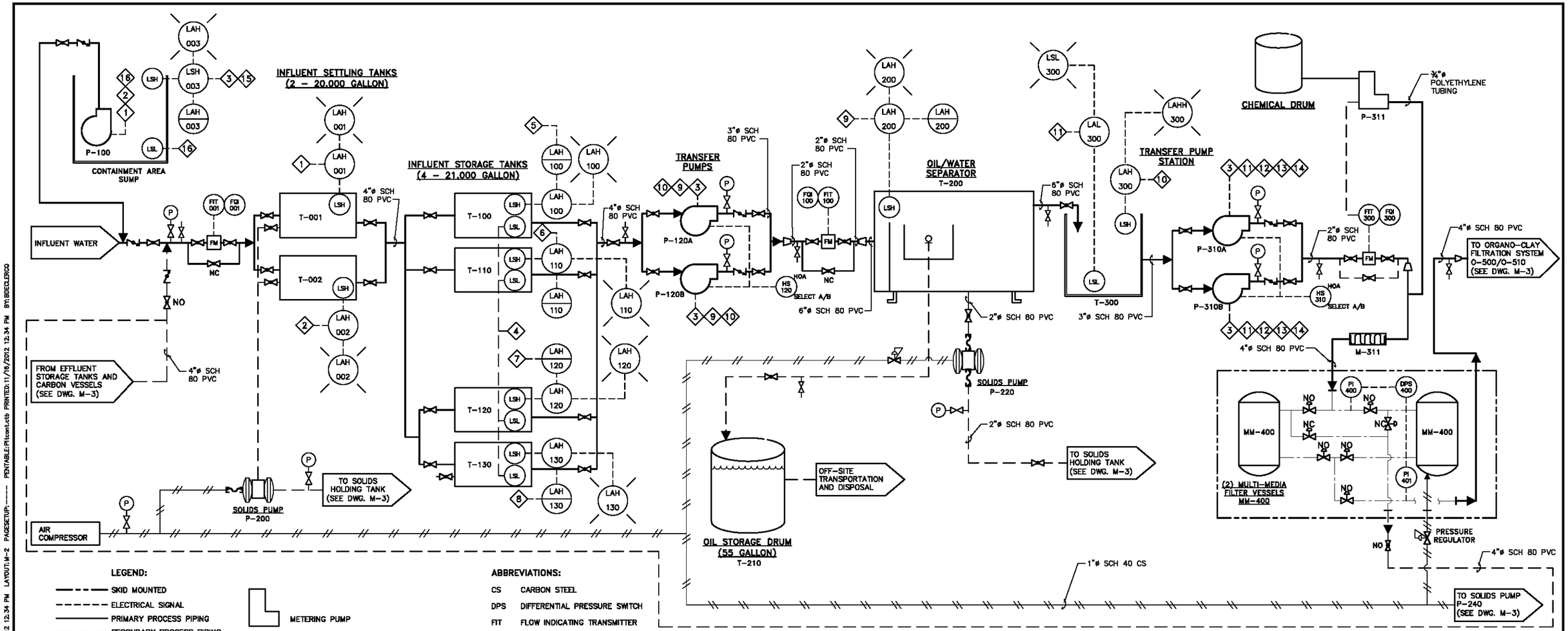

LEGEND:

- SKID MOUNTED
- ELECTRICAL SIGNAL
- PRIMARY PROCESS PIPING
- SECONDARY PROCESS PIPING
- AIR SUPPLY
- BACKWASH PIPING
- VENDOR-SUPPLIED PIPING
- SAMPLE TAP
- PRESSURE GAUGE
- BALL VALVE
- CHECK VALVE
- PNEUMATIC VALVE
- FLOW METER
- CENTRIFUGAL PUMP
- DOUBLE-DIAPHRAGM PUMP
- PRESSURE REGULATOR
- FLEXIBLE PIPING
- METERING PUMP
- STATIC MIXER
- UNION
- REDUCER
- DIAMETER
- LOCAL, FIELD MOUNT
- LOCAL ALARM INDICATOR
- HAND SWITCH, HAND-OFF-AUTO
- LOCAL CONTROL PANEL AT TRANSFER PUMP STATION

ABBREVIATIONS:

CS	CARBON STEEL
DPS	DIFFERENTIAL PRESSURE SWITCH
FIT	FLOW INDICATING TRANSMITTER
FQI	FLOW QUANTITY INDICATOR
LAH	LEVEL ALARM HIGH
LAHH	LEVEL ALARM HIGH HIGH
LI	LEVEL INDICATOR
LIT	LEVEL INDICATING TRANSMITTER
LS	LEVEL SUMP
LSH	LEVEL SWITCH HIGH
LSL	LEVEL SWITCH LOW
NC	NORMALLY CLOSED
NO	NORMALLY OPEN
PAH	PRESSURE ALARM HIGH
PAL	PRESSURE ALARM LOW
PI	PRESSURE INDICATOR
PSH	PRESSURE SWITCH HIGH
PSL	PRESSURE SWITCH LOW
PVC	POLYVINYL-CHLORIDE
SCH	SCHEDULE

NOTE:

THE TEMPORARY WATER TREATMENT SYSTEM SHOWN ON THIS DRAWING REPRESENTS A TYPICAL TEMPORARY WATER TREATMENT SYSTEM THAT WAS DESIGNED BASED ON INDUSTRY-ACCEPTED DESIGN PRINCIPLES AND CONSISTS OF PROVEN TREATMENT TECHNOLOGIES AND CONFIGURATIONS. ALTHOUGH THE TEMPORARY WATER TREATMENT SYSTEM SHOWN ON THIS DRAWING IS COMPREHENSIVE, IT IS NOT NECESSARILY MEANT TO REPRESENT THE FINAL WATER TREATMENT SYSTEM THAT WILL BE IMPLEMENTED BY THE CONTRACTOR. INSTEAD, THE CONTRACTOR WILL BE GIVEN THE OPPORTUNITY TO PROPOSE AN ALTERNATE WATER TREATMENT SYSTEM DESIGN THAT AT A MINIMUM SHALL MEET THE PERFORMANCE STANDARDS AND DESIGN, CONSTRUCTION, AND OPERATIONAL INTENT AS INDICATED ON THIS DRAWING.

CONTROL SYSTEM INTERLOCKS

INTERLOCK #	DESCRIPTION
1	IF HIGH LEVEL ALARM AT T-001 (LAH-001), SIGNAL ALARM AT MCP, TURN OFF PUMP P-100, AND TURN OFF PUMPS P-960A AND P-960B.
2	IF HIGH LEVEL ALARM AT T-002 (LAH-002), SIGNAL ALARM AT MCP, TURN OFF PUMP P-100, AND TURN OFF PUMPS P-960A AND P-960B.
3	IF HIGH-HIGH LEVEL ALARM AT CONTAINMENT AREA SUMP (LAHH-003), SIGNAL ALARM AT MCP AND TURN OFF PUMPS P-120A AND P-120B, TURN OFF PUMPS P-310A AND P-310B, AND TURN OFF PUMPS P-960A AND P-960B.
4	IF LOW LEVEL ALARM AT T-100, T-110, T-120 OR T-130 (LAL-100, LAL-110, LAL-120 OR LAL-130), SIGNAL ALARM AT MCP, TURN OFF PUMPS P-960A AND P-960B, AND TURN OFF PUMPS P-120A AND P-120B.
5	IF HIGH LEVEL ALARM AT T-100 (LAH-100), SIGNAL ALARM AT MCP.
6	IF HIGH LEVEL ALARM AT T-110 (LAH-110), SIGNAL ALARM AT MCP.
7	IF HIGH LEVEL ALARM AT T-120 (LAH-120), SIGNAL ALARM AT MCP.
8	IF HIGH LEVEL ALARM AT T-130 (LAH-130), SIGNAL ALARM AT MCP.
9	IF HIGH LEVEL ALARM AT T-200 (LAH-200), SIGNAL ALARM AT MCP AND TURN OFF PUMPS P-120A AND P-120B.
10	IF HIGH LEVEL ALARM AT T-300 (LAH-300), SIGNAL ALARM AT MCP AND TURN OFF PUMPS P-120A AND P-120B.
11	IF LOW LEVEL ALARM AT T-300 (LAL-300), SIGNAL ALARM AT MCP AND TURN OFF PUMPS P-310A AND P-310B.
12	IF HIGH LEVEL ALARM AT T-900 (LAH-900), SIGNAL ALARM AT MCP AND TURN OFF PUMPS P-310A AND P-310B.
13	IF HIGH LEVEL ALARM AT T-910 (LAH-910), SIGNAL ALARM AT MCP AND TURN OFF PUMPS P-310A AND P-310B.
14	IF LOW LEVEL ALARM AT T-900 OR T-910 (LAL-900 OR LAL-910), SIGNAL ALARM AT MCP, TURN OFF PUMPS P-310A AND 310B, AND TURN OFF PUMPS P-960A AND P-960B.
15	IF HIGH LEVEL ALARM AT CONTAINMENT AREA SUMP (LAH-003), SIGNAL ALARM AT MCP.
16	IF LOW LEVEL ALARM AT CONTAINMENT AREA SUMP (LAL-003), SIGNAL ALARM AT MCP AND TURN OFF PUMP P-100.

NOT TO SCALE

THIS BAR REPRESENTS ONE INCH ON THE ORIGINAL DRAWING: USE TO VERIFY FIGURE REPRODUCTION SCALE

No.	Date	Revisions	By	Ckd

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Professional Engineer's Name: LOWELL W. McBURNEY
Professional Engineer's No.: 10767
State: NH | Date Signed: | Project Mgr.: CRA
Designed by: MAM | Drawn by: . | Checked by: .

DRAFT FOR EPA REVIEW

ARCADIS
ARCADIS U.S., INC.

GENERAL ELECTRIC COMPANY
FLETCHER'S PAINT WORKS AND STORAGE FACILITY SUPERFUND SITE
MILFORD, NEW HAMPSHIRE
FINAL (100%) DESIGN REPORT

TEMPORARY WATER TREATMENT SYSTEM - PROCESS AND INSTRUMENTATION DIAGRAM - MILL STREET AREA

ARCADIS Project No. B0020985.0002.00006
Date NOVEMBER 2012
ARCADIS OF NEW YORK
6723 TOWPATH ROAD
P.O. BOX 66
SYRACUSE, NEW YORK
TEL. 315.446.9120

M-2

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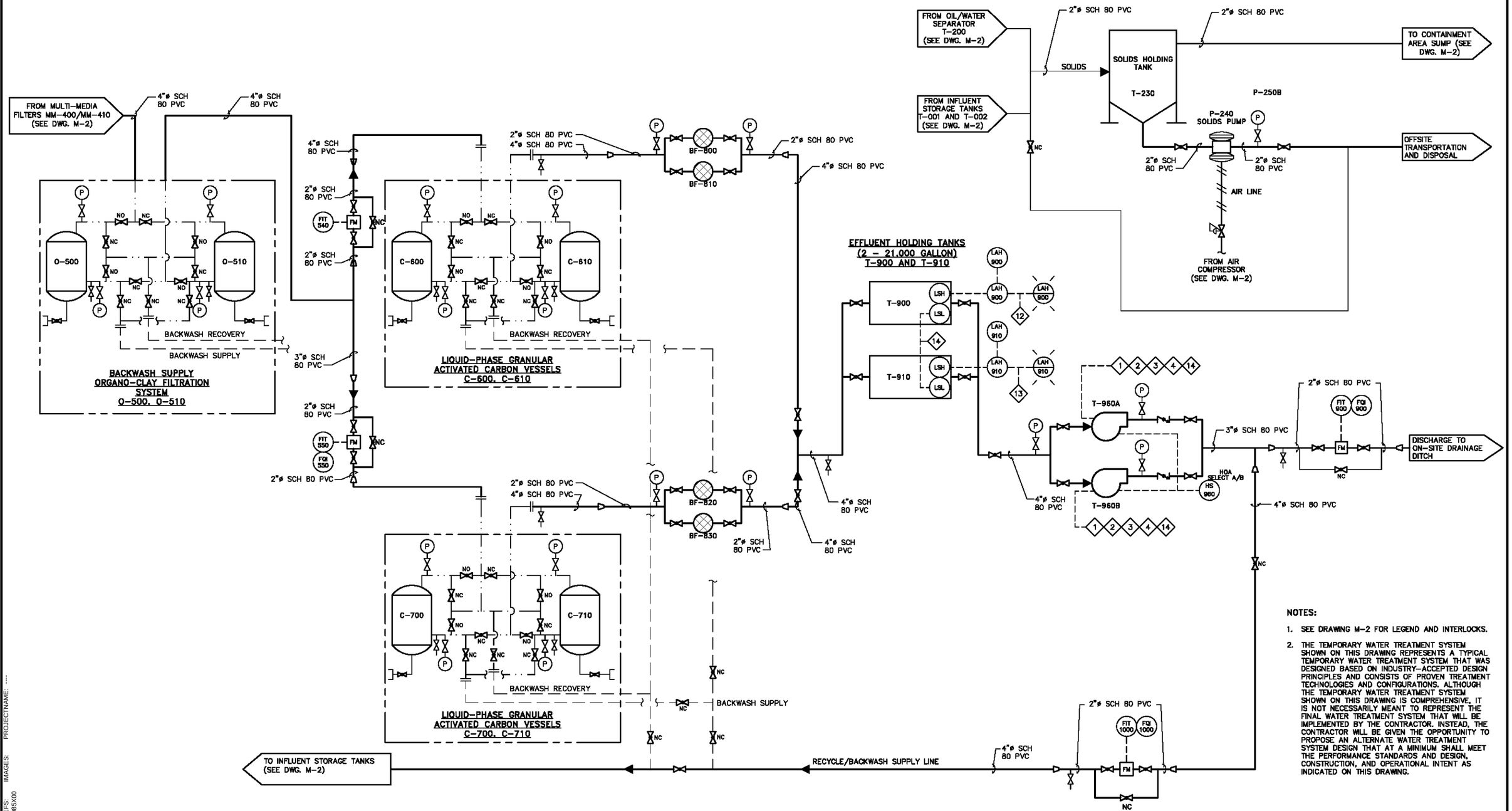

NOTES:

1. SEE DRAWING M-2 FOR LEGEND AND INTERLOCKS.
2. THE TEMPORARY WATER TREATMENT SYSTEM SHOWN ON THIS DRAWING REPRESENTS A TYPICAL TEMPORARY WATER TREATMENT SYSTEM THAT WAS DESIGNED BASED ON INDUSTRY-ACCEPTED DESIGN PRINCIPLES AND CONSISTS OF PROVEN TREATMENT TECHNOLOGIES AND CONFIGURATIONS. ALTHOUGH THE TEMPORARY WATER TREATMENT SYSTEM SHOWN ON THIS DRAWING IS COMPREHENSIVE, IT IS NOT NECESSARILY MEANT TO REPRESENT THE FINAL WATER TREATMENT SYSTEM THAT WILL BE IMPLEMENTED BY THE CONTRACTOR. INSTEAD, THE CONTRACTOR WILL BE GIVEN THE OPPORTUNITY TO PROPOSE AN ALTERNATE WATER TREATMENT SYSTEM DESIGN THAT AT A MINIMUM SHALL MEET THE PERFORMANCE STANDARDS AND DESIGN, CONSTRUCTION, AND OPERATIONAL INTENT AS INDICATED ON THIS DRAWING.

NOT TO SCALE

THIS BAR REPRESENTS ONE INCH ON THE ORIGINAL DRAWING: USE TO VERIFY FIGURE REPRODUCTION SCALE

No.	Date	Revisions	By	Ckd

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Professional Engineer's Name: LOWELL W. McBURNEY
Professional Engineer's No.: 10767
State: NH | Date Signed: | Project Mgr.: CRA
Designed by: MAM | Drawn by: MAM | Checked by:

DRAFT FOR EPA REVIEW

ARCADIS
ARCADIS U.S., INC.

GENERAL ELECTRIC COMPANY
FLETCHER'S PAINT WORKS AND STORAGE FACILITY SUPERFUND SITE
MILFORD, NEW HAMPSHIRE
FINAL (100%) DESIGN REPORT

TEMPORARY WATER TREATMENT SYSTEM - PROCESS AND INSTRUMENTATION DIAGRAM - MILL STREET AREA

ARCADIS Project No. B0020985.0002.00006
Date NOVEMBER 2012
ARCADIS OF NEW YORK
6723 TOWPATH ROAD
P.O. BOX 66
SYRACUSE, NEW YORK
TEL. 315.446.9120

M-3

SYR-85-GIS KLS GMS LAYER: ON=*, OFF=*REF
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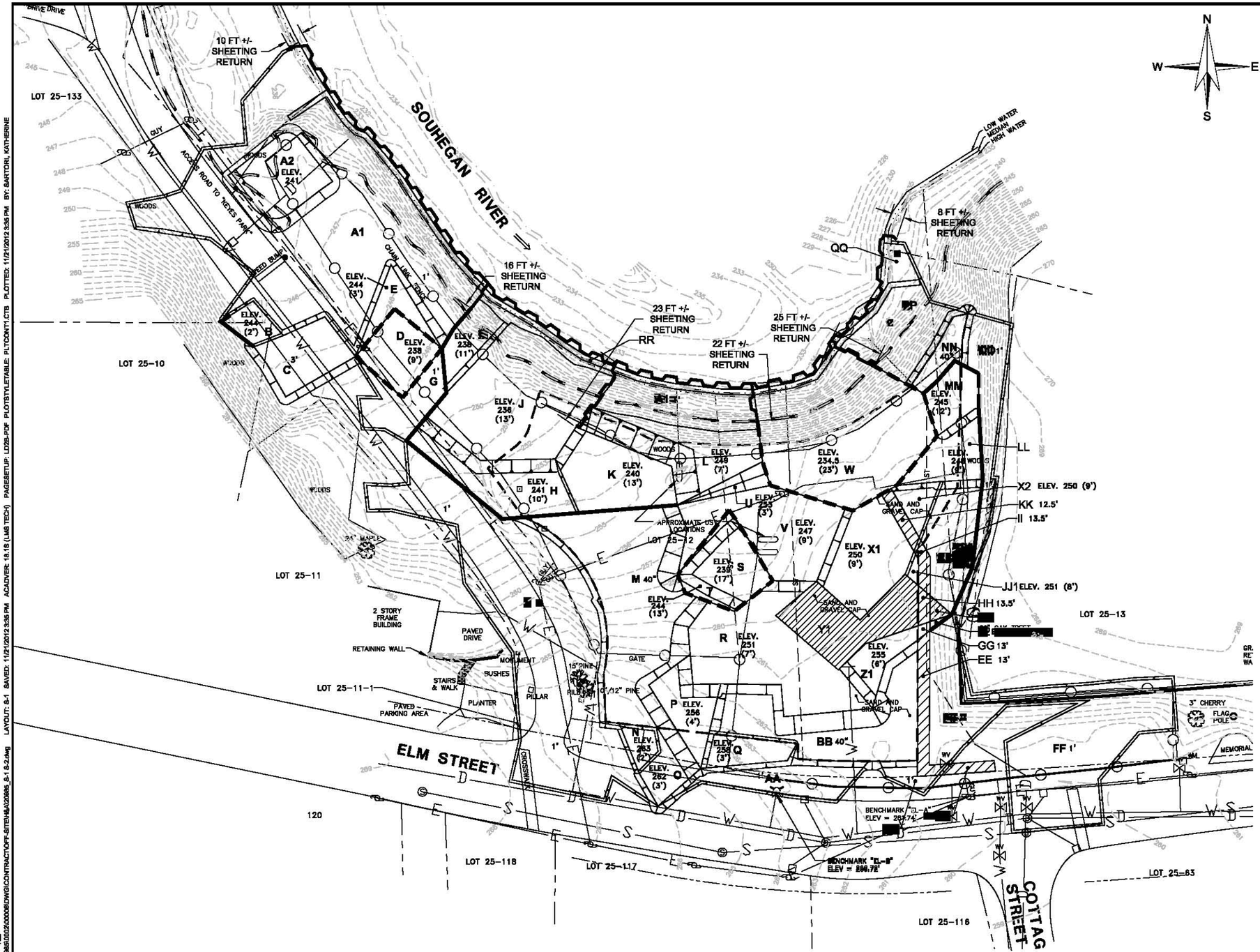

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LEGEND:

- APPROXIMATE LOCATION OF STEEL SHEETING
- APPROXIMATE LOCATION OF CANTILEVER DRILLED IN SOLDIER PILE AND LAGGING
- APPROXIMATE LOCATION OF DRILLED IN SOLDIER PILE AND LAGGING WITH INTERNAL BRACING
- APPROXIMATE LIMITS OF UTILITY CORRIDOR WITH SUPPORT OF EXCAVATION BY TRENCH BOX OR OTHER METHOD ACCEPTED BY ENGINEER. NUMBER INDICATES APPROXIMATE DEPTH OF EXCAVATION
- ELEV. 252 (5') — BOTTOM OF EXCAVATION ELEVATION. DEPTH SHOWN IN PARENTHESES IS APPROXIMATE. THE CONTRACTOR SHALL EXCAVATE TO SPECIFIED ELEVATION WHERE NOTED. THE CONTRACTOR SHALL EXCAVATE TO THE SPECIFIED DEPTH WHERE ELEVATION IS NOT NOTED.
- 260 — EXISTING INDEX SURFACE ELEVATION CONTOUR
- SOIL REMOVAL CELL LIMITS BASED ON FIGURE G-12 BY ARCADIS BBL DATED NOVEMBER 2012.

NOTES:

1. SEE DRAWING S-2 FOR NOTES AND CONSTRUCTION SEQUENCE.

ORIGINAL SCALE APPLIES TO 22"X34" DRAWING

0 30 60 90 FT

THIS DRAWING WAS PREPARED AT THE SCALE(S) INDICATED. INACCURACIES IN THE STATED SCALE(S) MAY BE INTRODUCED WHEN DRAWINGS ARE REPRODUCED. USE THE GRAPHIC SCALE BAR(S) TO DETERMINE THE ACTUAL SCALE(S) OF THIS DRAWING.

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Professional Engineer's Name: XXXX
Professional Engineer's No.: XXX
State: XXX
Date Signed:
Project Mgr.: DRS
Designed by: DRS
Drawn by: MC

DRAFT
FOR EPA REVIEW

PREPARED BY: HALEY & ALDRICH
FOR: ARCADIS
ARCADIS U.S., INC.

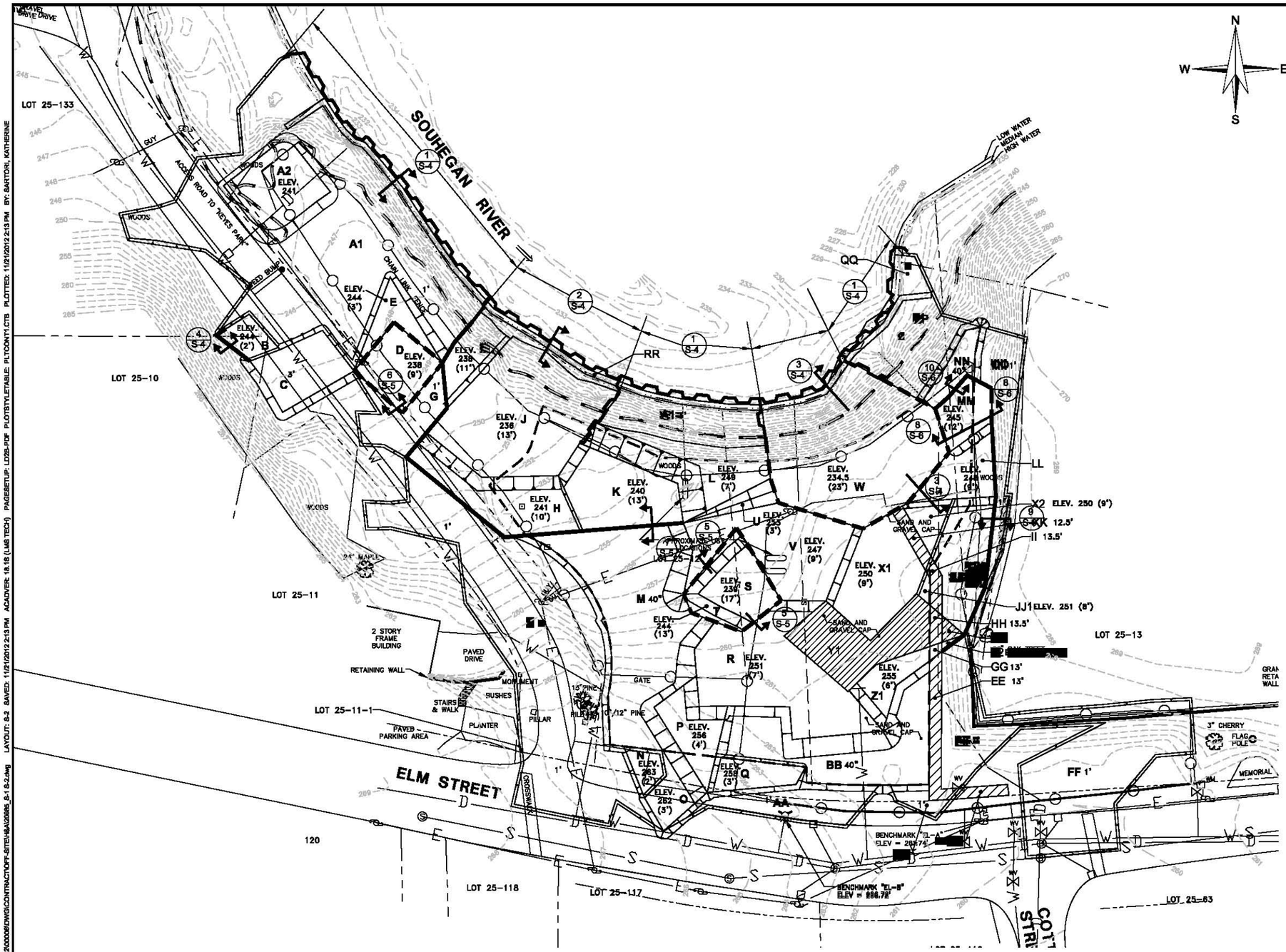
GENERAL ELECTRIC COMPANY
FLETCHER'S PAINT WORKS AND STORAGE FACILITY SUPERFUND SITE
MILFORD, NEW HAMPSHIRE
FINAL (100%) DESIGN REPORT

SOIL REMOVAL LIMITS AND SUPPORT OF SYSTEM LAYOUT - ELM STREET AREA

HALEY & ALDRICH Project No. 32608-003
Date NOVEMBER 2012
HALEY & ALDRICH, Inc.
465 Medford Street
Boston, MA 02129
617.886.7400

S-1

CITY: SYRACUSE-NY LYR:ON=*;OFF=*REF* V:\ENVCAD\SYRACUSE\ACT\B0020985\0002\00085\DWG\CONTRACTOFF-SITE\HA\20985_S-1 S-2.dwg LAYOUT: S-1 SAVED: 11/21/2012 3:35 PM ACADVER: 18.1S (LMS TECH) PAGESETUP: LD25-PDF PLOTSTYLETABLE: PLTCONTY.CTB PLOTTED: 11/24/2012 3:35 PM BY: SARTORI, KATHERINE



N
W E
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LEGEND:

- APPROXIMATE LOCATION OF STEEL SHEETING
- APPROXIMATE LOCATION OF CANTILEVER DRILLED IN SOLDIER PILE AND LAGGING
- APPROXIMATE LOCATION OF DRILLED IN SOLDIER PILE AND LAGGING WITH INTERNAL BRACING
- APPROXIMATE LIMITS OF UTILITY CORRIDOR WITH SUPPORT OF EXCAVATION BY TRENCH BOX OR OTHER METHOD ACCEPTED BY ENGINEER.
- ELEV. 252 (5') — BOTTOM OF EXCAVATION ELEVATION. DEPTH SHOWN IN PARENTHESES IS APPROXIMATE. THE CONTRACTOR SHALL EXCAVATE TO SPECIFIED ELEVATION WHERE NOTED. THE CONTRACTOR SHALL EXCAVATE TO THE SPECIFIED DEPTH WHERE ELEVATION IS NOT NOTED.
- —260— EXISTING INDEX SURFACE ELEVATION CONTOUR
- SOIL REMOVAL CELL LIMITS BASED ON FIGURE G-12 BY ARCADIS BBL DATED NOVEMBER 2012.

NOTES:

1. BASE PLAN PREPARED FROM A PLAN TITLED "COMBINED LIMITS OF EXCAVATION", PREPARED BY ARCADIS BBL, RECEIVED 16 NOVEMBER 2012.
2. ALL ELEVATIONS ARE IN FEET AND REFERENCE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88).
3. EXCAVATED SLOPES ASSUME A 1.5H:1V MAXIMUM SLOPE ANGLE ACCORDING TO OSHA STANDARDS IN ORDER TO ACCOMMODATE PERSONAL ENTRY INSIDE THE EXCAVATIONS. ACTUAL STABLE SLOPE ANGLE TO BE DETERMINED BY THE CONTRACTOR BASED ON SOIL CONDITIONS ENCOUNTERED.
4. SEE DRAWING S-3 FOR SIZE AND LOCATION OF BRACING FOR CELLS W, T/S AND D.
5. SOLDIER PILE SPACING SHALL BE 6 FT ON CENTER FOR SOIL REMOVAL CELLS W AND T/S AND 5 FT ON CENTER FOR ALL OTHER SOIL REMOVAL CELLS.
6. SEE DRAWINGS S-4 THROUGH S-7 FOR MINIMUM REQUIRED SOLDIER PILES EMBEDMENT DEPTH.
7. SEE DRAWING S-4 FOR MINIMUM REQUIRED STEEL SHEETING EMBEDMENT DEPTH.
8. SOLDIER PILE AND LAGGING AND STEEL SHEETING ARE DESIGNED FOR A 30 FT WIDE, 300 PSF, VERTICAL SURCHARGE LOCATED 1 FT BEHIND THE WALL FOR ALL CELLS EXCEPT CELLS B, MM, JJ2, AND OO.
9. ALL STRUCTURAL STEEL SHALL CONFORM TO ASTM A992 (GRADE 50) WITH EXCEPTION OF PIPE SECTIONS THAT SHALL CONFORM TO ASTM A500 (GRADE 46) UNLESS OTHERWISE NOTED.
10. DESIGN GROUNDWATER ELEVATION 238.
11. THE STEEL SHEETING IS DESIGNED FOR 25 YEAR FLOOD ELEVATION OF EL. 242.9. THE INFORMATION IN THE FEMA FIS (NOVEMBER, 1979) INDICATES A 25 YEAR FLOOD ELEVATION OF EL. 242.5.
12. EXCAVATION IS REQUIRED ON THE OUT-BOARD (ACTIVE) SIDE OF SOLDIER PILE AND LAGGING SUPPORTED EXCAVATIONS PRIOR TO COMPLETING THE REQUIRED EXCAVATION ON THE IN-BOARD (PASSIVE) SIDE.
13. ALL WELDING SHALL CONFORM TO THE AWSD1.1 STRUCTURAL WELDING CODE, ELECTRODES SHALL BE E70XX.

CONSTRUCTION SEQUENCE:

1. INSTALL SOLDIER PILES OR SHEETING AS SHOWN
2. EXCAVATE AS REQUIRED ON THE OUT-BOARD (ACTIVE) SIDE OF THE SUPPORT OF EXCAVATION SYSTEM
3. EXCAVATE TO PLANNED BOTTOM OF EXCAVATION ON THE IN-BOARD (PASSIVE) SIDE OF THE SUPPORT OF EXCAVATION SYSTEM, STOPPING EXCAVATION AS REQUIRED TO INSTALL BRACING.
4. BACKFILL AND COMPACT IN ACCORDANCE WITH SPECIFICATION SECTION 02201 EARTHWORK

ORIGINAL SCALE APPLIES TO 22"X34" DRAWING
0 30 60 90 FT

THIS DRAWING WAS PREPARED AT THE SCALE(S) INDICATED. INACCURACIES IN THE STATED SCALE(S) MAY BE INTRODUCED WHEN DRAWINGS ARE REPRODUCED. USE THE GRAPHIC SCALE BAR(S) TO DETERMINE THE ACTUAL SCALE(S) OF THIS DRAWING.

No.	Date	Revisions	Init

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Professional Engineer's Name: XXXX
Professional Engineer's No.: XXX
State: XXX | Date Signed:
Project Mgr.: DRS | Designed by: DRS | Drawn by: MC

DRAFT
FOR EPA REVIEW

PREPARED BY: HALEY & ALDRICH
FOR: ARCADIS
ARCADIS U.S., INC.

GENERAL ELECTRIC COMPANY
FLETCHER'S PAINT WORKS AND STORAGE FACILITY SUPERFUND SITE
MILFORD, NEW HAMPSHIRE
FINAL (100%) DESIGN REPORT

SOIL REMOVAL SLOPES AND SUPPORT OF EXCAVATION SYSTEM LAYOUT - ELM STREET AREA

HALEY & ALDRICH Project No. 32608-003
Date NOVEMBER 2012
HALEY & ALDRICH, Inc.
465 Medford Street
Boston, MA 02129
617.886.7400

S-2

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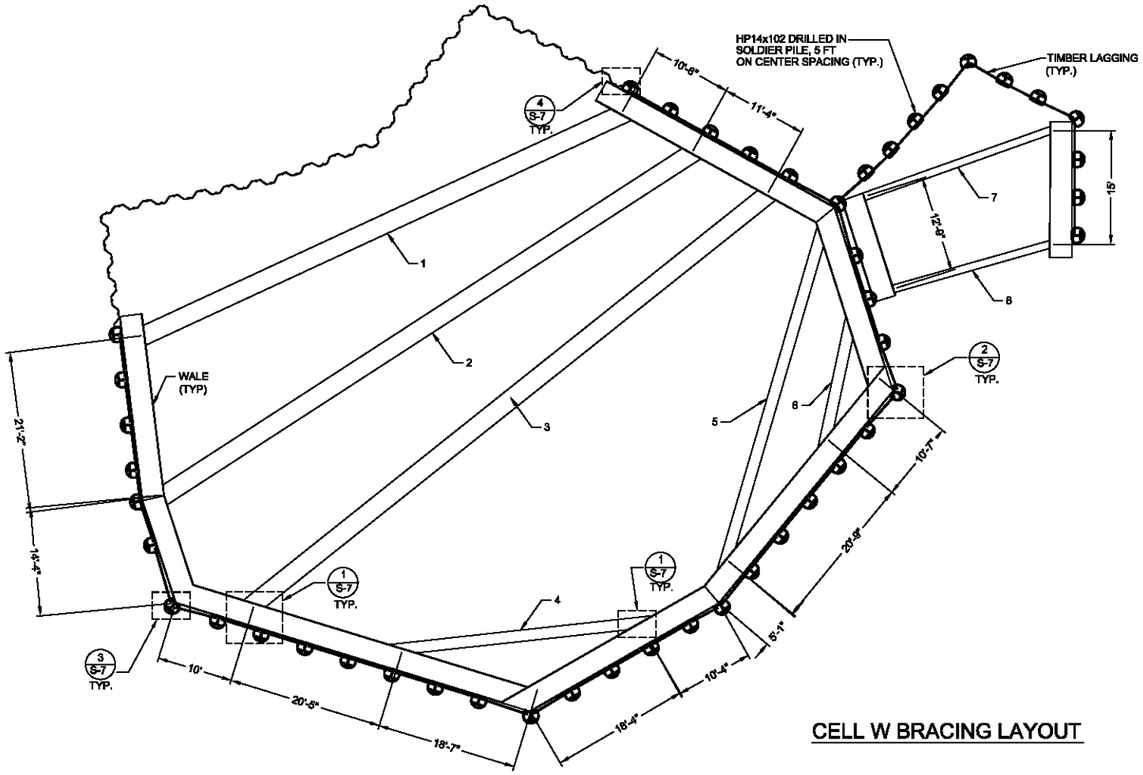
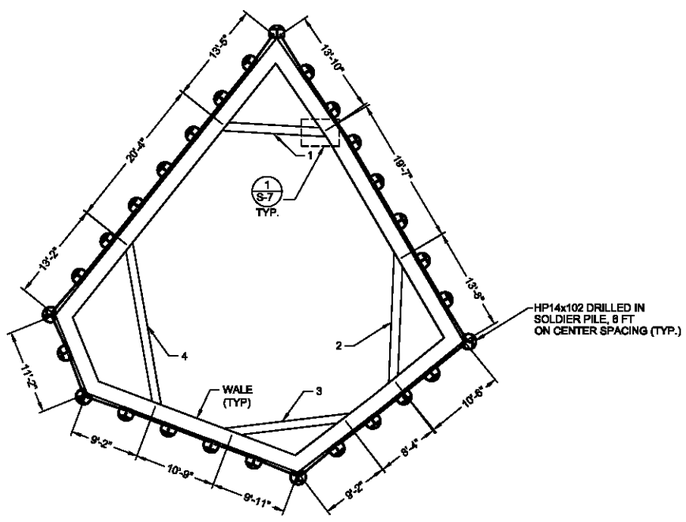
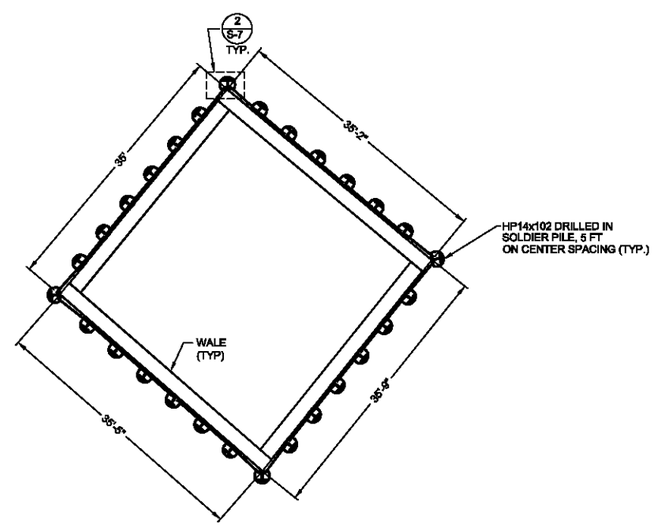


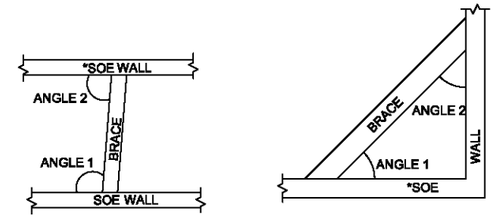
CELL W BRACING LAYOUT



CELL S/T BRACING LAYOUT



CELL D BRACING LAYOUT



*SUPPORT OF EXCAVATION (SOE) WALL REFERS TO SOLDER PILE AND LAGGING OR SHEETING WALL AS APPLICABLE

CELL W BRACING SCHEDULE:

MEMBER	LOWER BRACE	ANGLE 1*	ANGLE 2*	CENTER LINE EL.
1	30"Øx5/8" PIPE	72°	54°	246
2	30"Øx5/8" PIPE	64°	62°	246
3	30"Øx5/8" PIPE	125°	68°	246
4	18"Øx1/2" PIPE	157°	157°	246
5	24"Øx1/2" PIPE	157°	103°	246
6	18"Øx1/2" PIPE	153°	150°	246
WALE	W 36 X 150	NA	NA	246

CELL MM BRACING SCHEDULE:

MEMBER	BRACE	ANGLE 1	ANGLE 2	CENTER LINE EL.
7	12"Øx1/2" PIPE	70°	92°	251*
8	12"Øx1/2" PIPE	74°	88°	251*
WALE	W 36 X 150	NA	NA	251

*BRACE INCLINED BETWEEN THE WALE AT EL. 251 IN CELL MM AND THE WALE AT EL. 246 IN CELL W

CELL S/T BRACING SCHEDULE:

MEMBER	BRACE	ANGLE 1*	ANGLE 2*	CENTER LINE EL.
1	HP14 X 73	55°	52°	247
2	HP14 X 73	33°	48°	247
3	HP14 X 73	31°	27°	247
4	HP14 X 73	60°	49°	247
WALE	W 24 X 104	NA	NA	247

CELL D BRACING SCHEDULE:

MEMBER	BRACE	ANGLE 1	ANGLE 2	CENTER LINE EL.
WALE	W 24 X 104	NA	NA	246

NOTES:

1. SEE DRAWING S-2 FOR GENERAL NOTES AND CELL EXCAVATION DEPTHS.
2. ALL DIMENSIONS AND ANGLES ARE APPROXIMATE AND REFER TO CENTER LINE OF BRACING.
3. CONTRACTOR SHALL CONFIRM ALL BRACING DIMENSIONS IN FIELD PRIOR TO FABRICATION AND INSTALLATION. INFORM HALEY & ALDRICH OF ANY DIFFERENCES.
4. TIMBER LAGGING SHALL BE SOUTHERN YELLOW PINE, NO. 2 OR BETTER, HAVING A Fb = 850 PSI AND A Fc = 550 PSI, OR APPROVED EQUAL.
5. REFER TO NOTE 8 ON DRAWING S-2 FOR SURCHARGE DETAILS.

ORIGINAL SCALE APPLIES TO 22"X34" DRAWING
0 10 20 30 FT

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2	11/19/10	REVISED SEASONAL LOW WATER EDITS	DRS

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Professional Engineer's Name: XXX
Professional Engineer's No.: XXX
State: XXX
Date Signed:
Project Mgr.: DRS
Designed by: DRS
Drawn by: MC

DRAFT
FOR EPA REVIEW

PREPARED BY: HALEY & ALDRICH
FOR: ARCADIS U.S., INC.

GENERAL ELECTRIC COMPANY
FLETCHER'S PAINT WORKS AND STORAGE FACILITY SUPERFUND SITE
MILFORD, NEW HAMPSHIRE
FINAL (100%) DESIGN REPORT

BRACING LAYOUT OF SOIL REMOVAL CELLS W, S/T AND D - ELM STREET AREA

HALEY & ALDRICH Project No. 32608-003
Date NOVEMBER 2012
HALEY & ALDRICH, Inc.
465 Medford Street
Boston, MA 02129
617.886.7400

S-3

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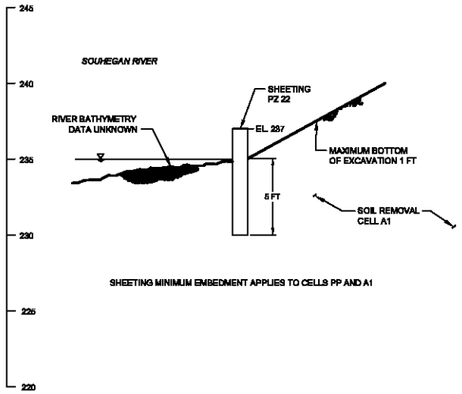
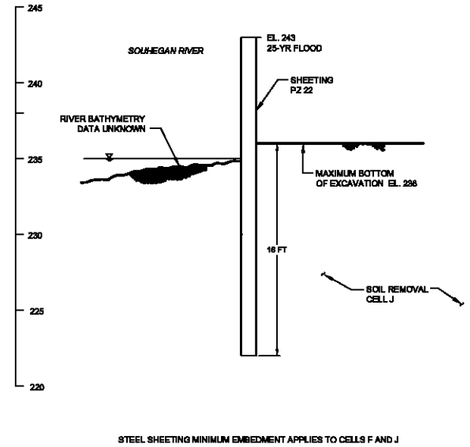
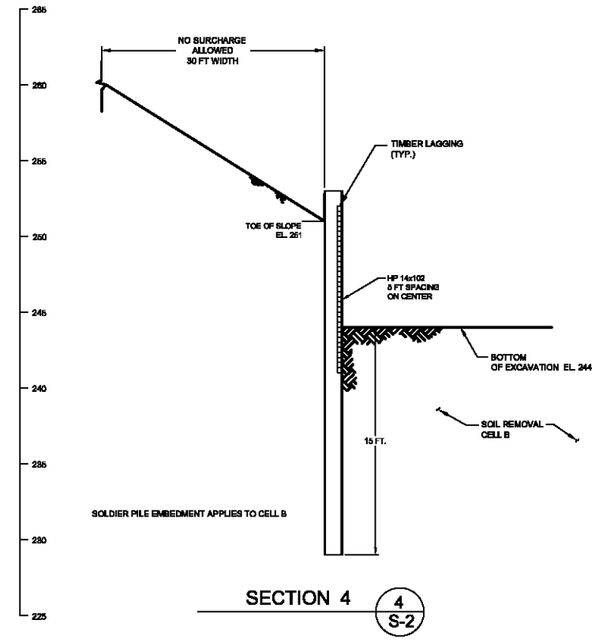


SECTION 1 (1 / S-2)



SECTION 2 (2 / S-2)



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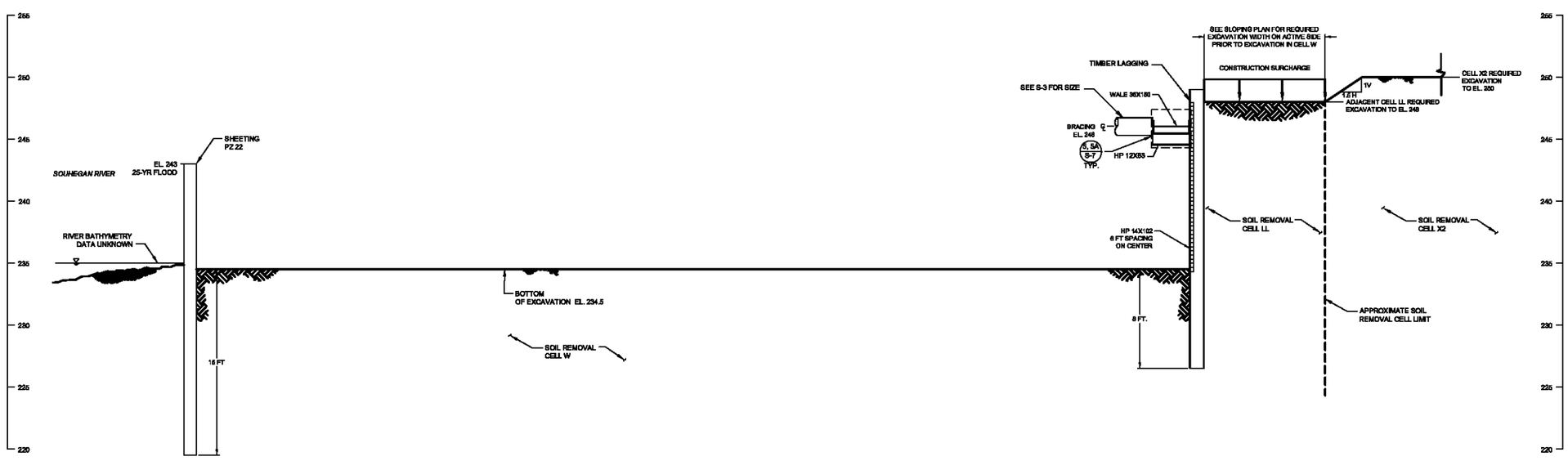

SECTION 3 (3 / S-2)

NOTES:

1. SEE DRAWINGS S-2 AND S-3 FOR NOTES.
2. REFER TO NOTE 8 ON DRAWING S-2 FOR SURCHARGE DETAILS.

ORIGINAL SCALE APPLIES TO 22"X34" DRAWING

0 5 10 15 FT

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Professional Engineer's Name: XXX
Professional Engineer's No.: XXX
State: XXX
Date Signed:
Project Mgr.: DRS
Designed by: DRS
Drawn by: MC

DRAFT
FOR EPA REVIEW

PREPARED BY: HALEY & ALDRICH
FOR: ARCADIS
ARCADIS U.S., INC.

GENERAL ELECTRIC COMPANY
FLETCHER'S PAINT WORKS AND STORAGE FACILITY SUPERFUND SITE
MILFORD, NEW HAMPSHIRE
FINAL (100%) DESIGN REPORT

ELEVATION SECTIONS - SHEET 1 OF 3 - ELM STREET AREA

HALEY & ALDRICH Project No. 32608-003
Date NOVEMBER 2012
HALEY & ALDRICH, Inc.
465 Medford Street
Boston, MA 02129
617.886.7400

S-4

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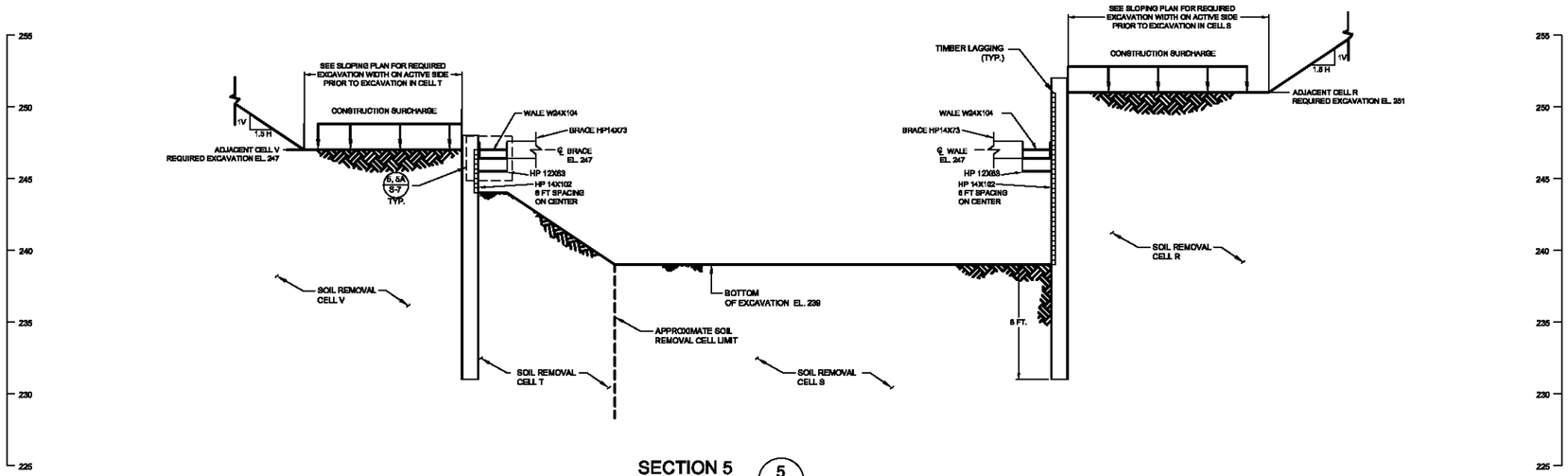

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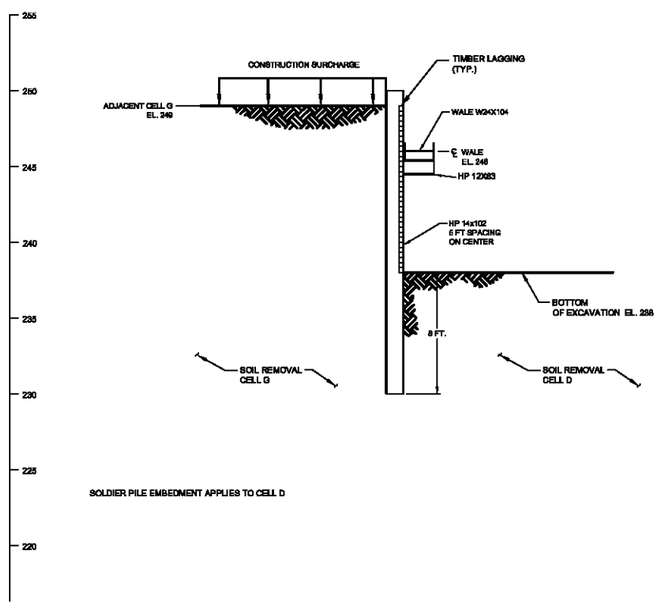
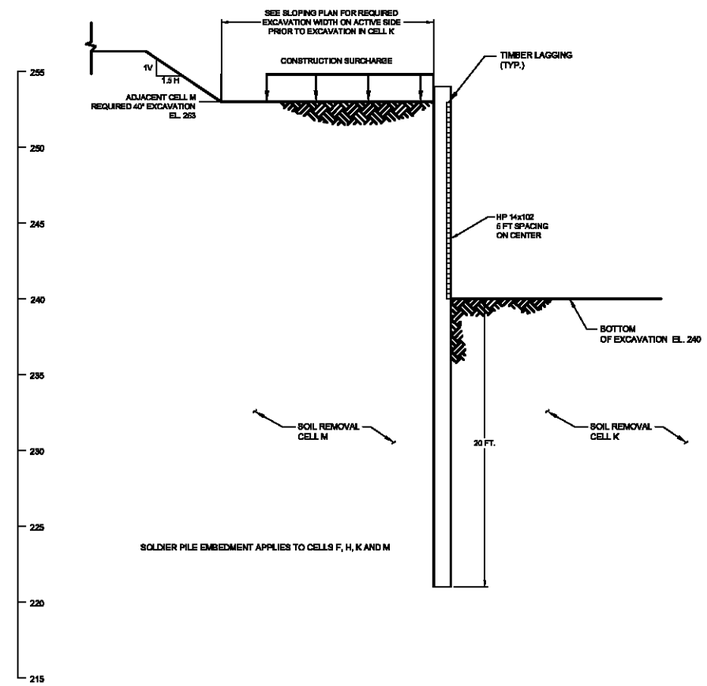


SECTION 6 (6 / S-2)



SECTION 7 (7 / S-2)

NOTES:

1. SEE DRAWINGS S-2 AND S-3 FOR NOTES.
2. REFER TO NOTE 8 ON DRAWING S-2 FOR SURCHARGE DETAILS.

ORIGINAL SCALE APPLIES TO 22"X34" DRAWING

0 5 10 15 FT

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Professional Engineer's Name: XXX
Professional Engineer's No.: XXX
State: XXX | Date Signed
Project Mgr.: DRS | Designed by: DRS | Drawn by: MC

DRAFT
FOR EPA REVIEW

PREPARED BY: HALEY & ALDRICH
FOR: ARCADIS
ARCADIS U.S., INC.

GENERAL ELECTRIC COMPANY
FLETCHER'S PAINT WORKS AND STORAGE FACILITY SUPERFUND SITE
MILFORD, NEW HAMPSHIRE
FINAL (100%) DESIGN REPORT

ELEVATION SECTIONS - SHEET 2 OF 3 - ELM STREET AREA

HALEY & ALDRICH Project No. 32608-003
Date NOVEMBER 2012
HALEY & ALDRICH, Inc.
465 Medford Street
Boston, MA 02129
617.886.7400

S-5

CITY: SYRACUSE-NY LYRCOM="OFF="REF"
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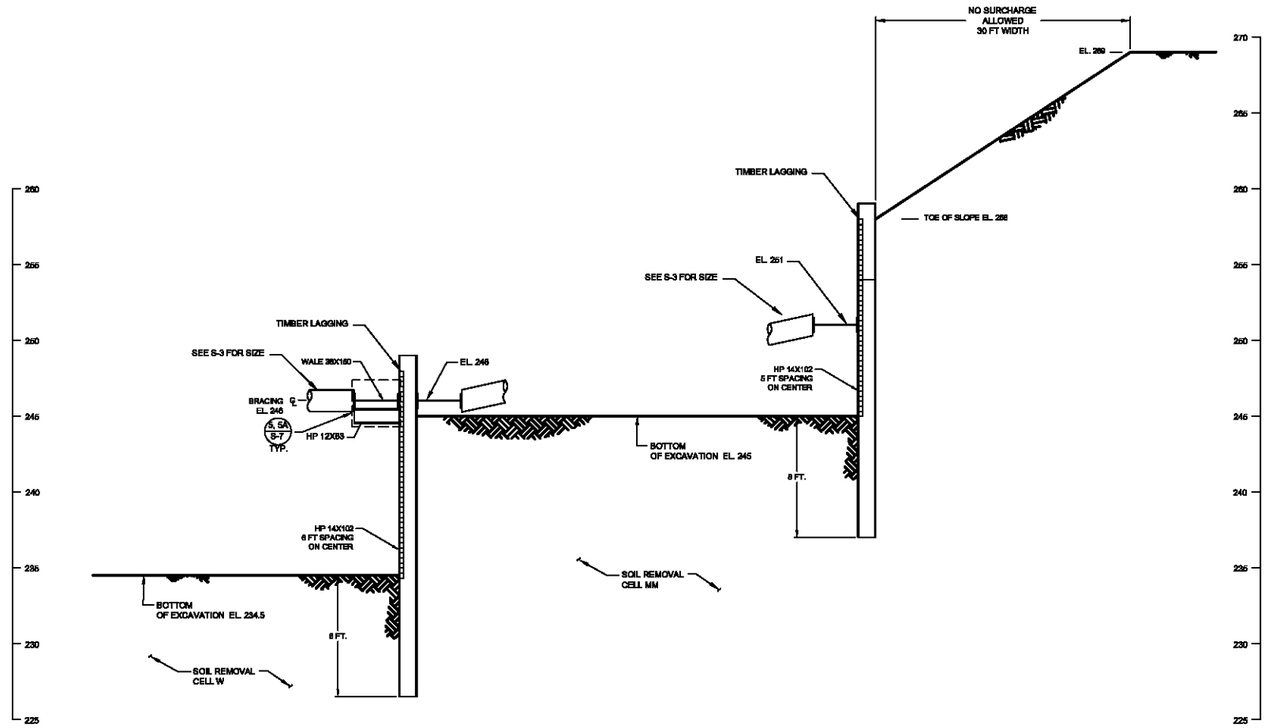
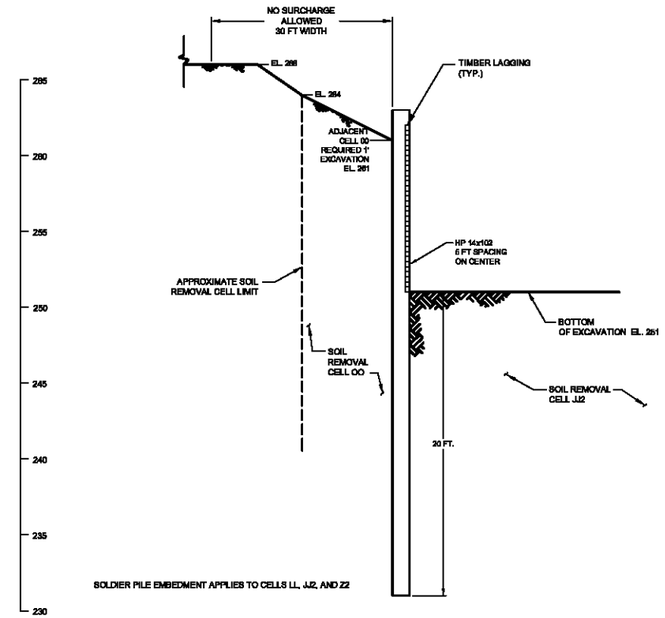
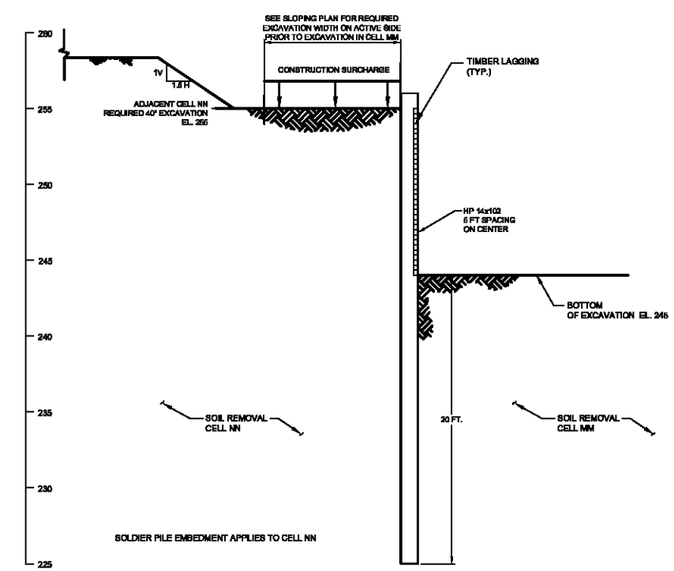


SECTION 8 (8 / S-2)



SECTION 9 (9 / S-2)



SECTION 10 (10 / S-2)

NOTES:

1. SEE DRAWINGS S-2 AND S-3 FOR NOTES.
2. REFER TO NOTE 8 ON DRAWING S-2 FOR SURCHARGE DETAILS.

0

ORIGINAL SCALE APPLIES TO 22"X34" DRAWING
5 10 15FT

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Professional Engineer's Name: XXXX
Professional Engineer's No.: XXX
State: XXX
Date Signed:
Project Mgr.: DRS
Designed by: DRS
Drawn by: BV

DRAFT
FOR EPA REVIEW

PREPARED BY: HALEY & ALDRICH
FOR: ARCADIS
ARCADIS U.S., INC.

GENERAL ELECTRIC COMPANY
FLETCHER'S PAINT WORKS AND STORAGE FACILITY SUPERFUND SITE
MILFORD, NEW HAMPSHIRE
FINAL (100%) DESIGN REPORT

ELEVATION SECTIONS - SHEET 3 OF 3 - ELM STREET AREA

HALEY & ALDRICH Project No. 32608-003
Date NOVEMBER 2012
HALEY & ALDRICH, Inc.
465 Medford Street
Boston, MA 02129
617.886.7400

S-6

CITY: SYRACUSE-NY LYROAN-OFF-REF
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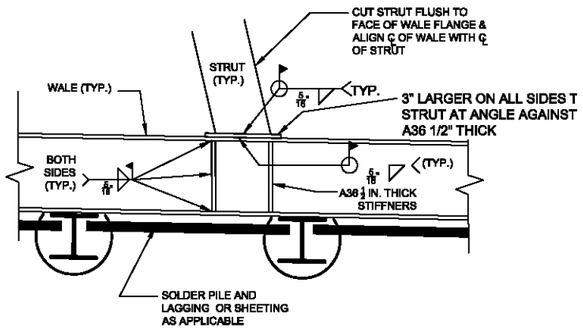
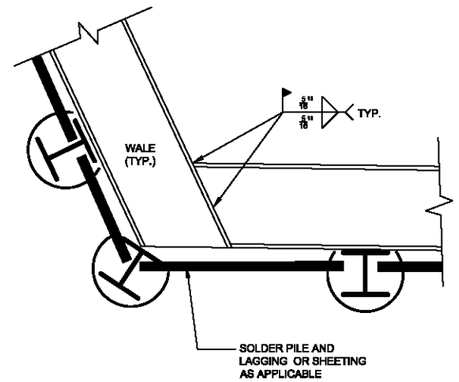
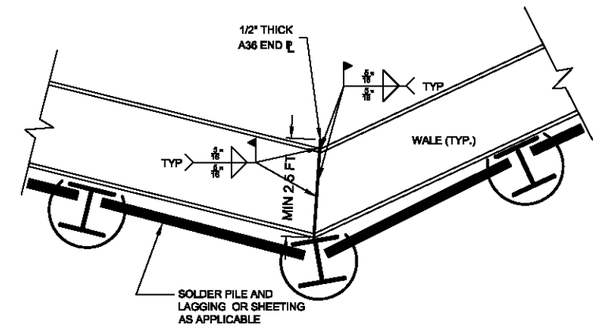


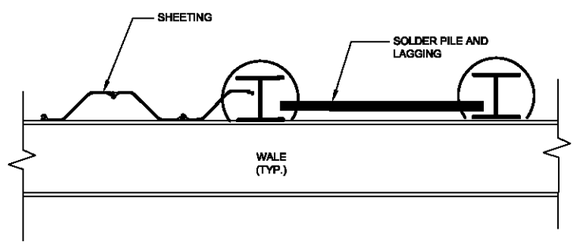
DETAIL 1 (1 / S-3)
STRUT TO WALE CONNECTION
NOT TO SCALE



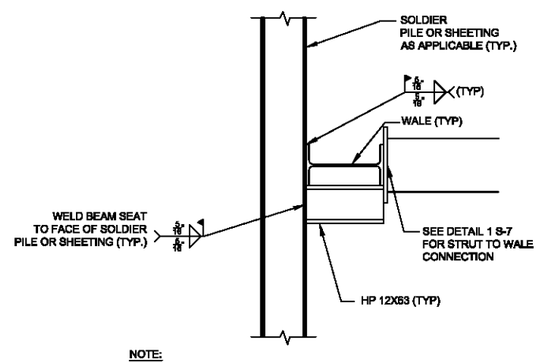
DETAIL 2 (2 / S-3)
WALE TO WALE CONNECTION
NOT TO SCALE



DETAIL 3 (3 / S-3)
WALE TO WALE CONNECTION
NOT TO SCALE



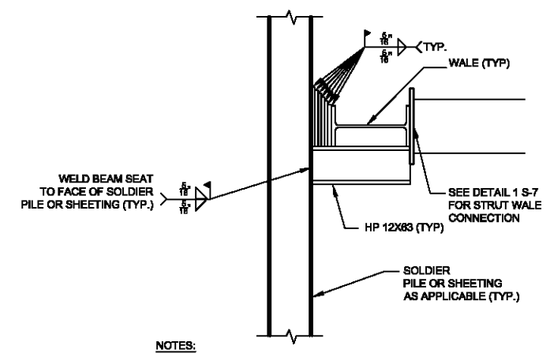
DETAIL 4 (4 / S-3)
SHEETING TO SOLDER PILE AND LAGGING CONNECTION
NOT TO SCALE



NOTE:

1. WELD BEAM SEAT AT EVERY OTHER SOLDIER PILE (TYP.) AND EVERY 5 FT ON THE STEEL SHEETING, WHERE APPLICABLE.

DETAIL 5 (5 / S-4, 5, 6)
BEAM SEAT CONNECTION
WALE FLUSH WITH FACE OF SOLDER PILE OR SHEETING, AS APPLICABLE
NOT TO SCALE



NOTES:

1. WELD BEAM SEAT AT EVERY OTHER SOLDIER PILE (TYP.) AND EVERY 5 FT ON THE STEEL SHEETING, WHERE APPLICABLE.
2. SHIM WITH STEEL PLATES AS REQUIRED

DETAIL 5A (5A / S-4, 5, 6)
BEAM SEAT CONNECTION
WALE OFF FACE OF SOLDER PILE OR SHEETING, AS APPLICABLE
NOT TO SCALE

ORIGINAL SCALE APPLIES TO 22"X34" DRAWING

AS SHOWN

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Professional Engineer's Name: XXXX
Professional Engineer's No.: XXX
State: XXX
Date Signed:
Project Mgr.: DRS
Designed by: DRS
Drawn by: BV

DRAFT
FOR EPA REVIEW

PREPARED BY: HALEY & ALDRICH
FOR: ARCADIS
ARCADIS U.S., INC.

GENERAL ELECTRIC COMPANY
FLETCHER'S PAINT WORKS AND STORAGE FACILITY SUPERFUND SITE
MILFORD, NEW HAMPSHIRE
FINAL (100%) DESIGN REPORT

DETAILS - ELM STREET AREA

HALEY & ALDRICH Project No. 32608-003
Date NOVEMBER 2012
HALEY & ALDRICH, Inc.
465 Medford Street
Boston, MA 02129
617.886.7400

S-7

CITY: SYRACUSE-NY LYRONM-"OFF-"REF"
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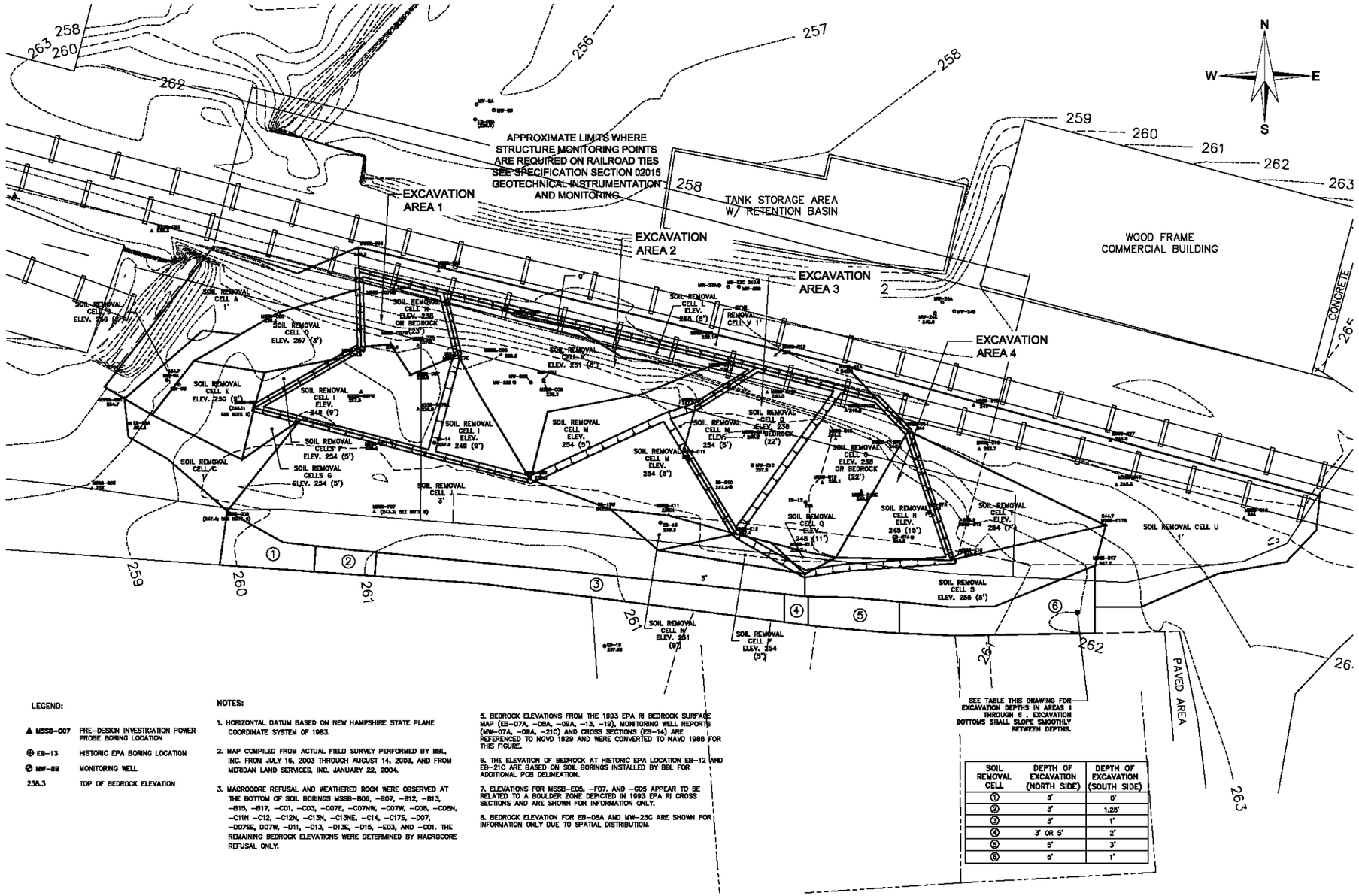

SOIL REMOVAL CELL	DEPTH OF EXCAVATION (NORTH SIDE)	DEPTH OF EXCAVATION (SOUTH SIDE)
①	3'	0'
②	3'	1.25'
③	3'	1'
④	3' OR 5'	2'
⑤	5'	3'
⑥	5'	1'

LEGEND:

- APPROXIMATE LOCATION OF SOLDIER PILE TREMIE CONCRETE WALL (SPTC)
- 260 — EXISTING INDEX SURFACE ELEVATION CONTOUR
- SOIL REMOVAL CELL LIMITS BASED ON DRAWING G-14 BY ARCADIS BBL DATED JUNE 2007.
- ELEV. 252 (5') — BOTTOM OF EXCAVATION ELEVATION. DEPTH SHOWN IN PARENTHESES IS APPROXIMATE. THE CONTRACTOR SHALL EXCAVATE TO SPECIFIED ELEVATION WHERE NOTED. THE CONTRACTOR SHALL EXCAVATE TO THE SPECIFIED DEPTH WHERE ELEVATION IS NOT NOTED.

NOTES:

1. SEE S-9 FOR GENERAL NOTES AND CONSTRUCTION SEQUENCE.
2. ALL ELEVATIONS ARE IN FEET AND REFERENCE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88).

LEGEND:

- ▲ MSSB-C07 — PRE-DESIGN INVESTIGATION POWER PROBE BORING LOCATION
- ⊕ EB-13 — HISTORIC EPA BORING LOCATION
- ⊘ MW-8B — MONITORING WELL
- 238.3 — TOP OF BEDROCK ELEVATION

NOTES:

1. HORIZONTAL DATUM BASED ON NEW HAMPSHIRE STATE PLANE COORDINATE SYSTEM OF 1983.
2. MAP COMPILED FROM ACTUAL FIELD SURVEY PERFORMED BY BBL, INC. FROM JULY 16, 2003 THROUGH AUGUST 14, 2003, AND FROM MERIDAN LAND SERVICES, INC. JANUARY 22, 2004.
3. MACROCORE REFUSAL AND WEATHERED ROCK WERE OBSERVED AT THE BOTTOM OF SOIL BORINGS MSSB-B06, -B07, -B12, -B13, -B15, -B17, -C01, -C03, -C07E, -C07NW, -C07W, -C08, -C08N, -C11N -C12, -C12N, -C13N, -C13NE, -C14, -C17S, -D07, -D07SE, D07W, -D11, -D13, -D13E, -D15, -E03, AND -G01. THE REMAINING BEDROCK ELEVATIONS WERE DETERMINED BY MACROCORE REFUSAL ONLY.
5. BEDROCK ELEVATIONS FROM THE 1993 EPA RI BEDROCK SURFACE MAP (EB-07A, -08A, -09A, -13, -19), MONITORING WELL REPORTS (MW-07A, -09A, -21C) AND CROSS SECTIONS (EB-14) ARE REFERENCED TO NGVD 1929 AND WERE CONVERTED TO NAVD 1988 FOR THIS FIGURE.
6. THE ELEVATION OF BEDROCK AT HISTORIC EPA LOCATION EB-12 AND EB-21C ARE BASED ON SOIL BORINGS INSTALLED BY BBL FOR ADDITIONAL PCB DELINEATION.
7. ELEVATIONS FOR MSSB-E05, -F07, AND -G05 APPEAR TO BE RELATED TO A BOULDER ZONE DEPICTED IN 1993 EPA RI CROSS SECTIONS AND ARE SHOWN FOR INFORMATION ONLY.
8. BEDROCK ELEVATION FOR EB-08A AND MW-25C ARE SHOWN FOR INFORMATION ONLY DUE TO SPATIAL DISTRIBUTION.

ORIGINAL SCALE APPLIES TO 22"X34" DRAWING

0 20 40 60 FT

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Professional Engineer's Name: XXXX
Professional Engineer's No.: XXX
State: XXX
Date Signed:
Project Mgr.: DRS
Designed by: DRS
Drawn by: BV

DRAFT
FOR EPA REVIEW

PREPARED BY: HALEY & ALDRICH
FOR: ARCADIS
ARCADIS U.S., INC.

GENERAL ELECTRIC COMPANY
FLETCHER'S PAINT WORKS AND STORAGE FACILITY SUPERFUND SITE
MILFORD, NEW HAMPSHIRE
FINAL (100%) DESIGN REPORT

SOIL REMOVAL LIMITS AND SUPPORT OF EXCAVATION SYSTEM LAYOUT - MILL STREET AREA

HALEY & ALDRICH Project No. 32608-003
Date NOVEMBER 2012
HALEY & ALDRICH, Inc.
465 Medford Street
Boston, MA 02129
617.886.7400

S-8

CITY: SYRACUSE-NY LYRCON=*OFF=REF*
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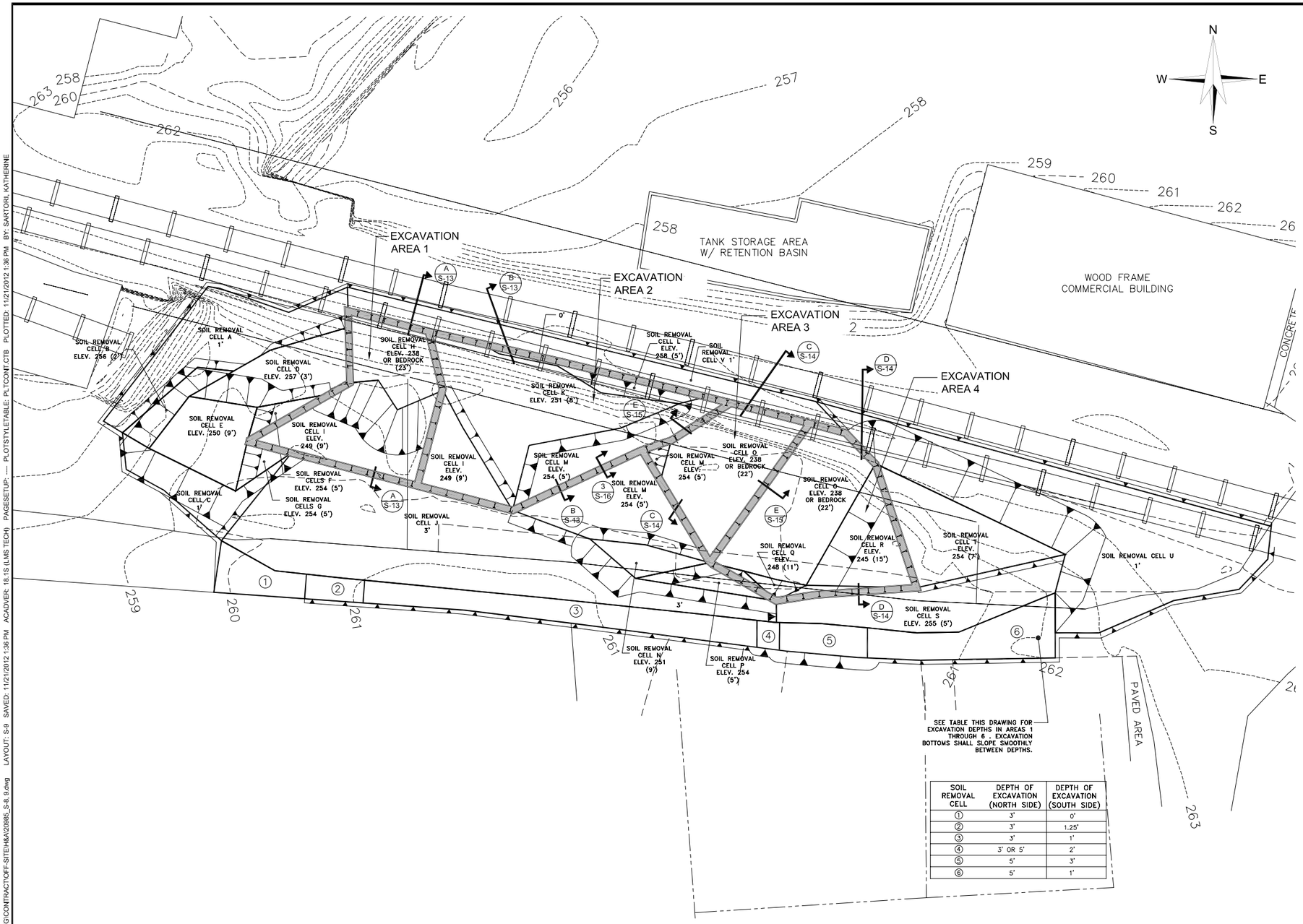

SOIL REMOVAL CELL	DEPTH OF EXCAVATION (NORTH SIDE)	DEPTH OF EXCAVATION (SOUTH SIDE)
1	3'	0'
2	3'	1.25'
3	3'	1'
4	3' OR 5'	2'
5	5'	3'
6	5'	1'

LEGEND:

- APPROXIMATE LOCATION OF SOLDIER PILE TREMIE CONCRETE (SPTC) WALL.
- 260 — EXISTING INDEX SURFACE ELEVATION CONTOUR
- APPROXIMATE LIMITS OF ASSUMED 1.5H:1V EXCAVATED SLOPE. SEE NOTE 4.
- SOIL REMOVAL CELL LIMITS BASED ON G-15 DRAWING BY ARCADIS BBL DATED JUNE 2007.
- ELEV. 252 (5') — BOTTOM OF EXCAVATION ELEVATION. DEPTH SHOWN IN PARENTHESES IS APPROXIMATE. THE CONTRACTOR SHALL EXCAVATE TO SPECIFIED ELEVATION WHERE NOTED. THE CONTRACTOR SHALL EXCAVATE TO THE SPECIFIED DEPTH WHERE ELEVATION IS NOT NOTED.

NOTES:

1. BASE PLAN PREPARED FROM DRAWING G-3.
2. ALL ELEVATIONS ARE IN FEET AND REFERENCE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88).
3. DESIGN GROUND WATER LEVEL IS EL. 254.
4. EXCAVATED SLOPES ASSUME A 1.5H:1V MAX SLOPE ANGLE CONSISTENT WITH APPLICABLE OSHA REGULATIONS IN ORDER TO ACCOMMODATE PERSONAL ENTRY INSIDE THE EXCAVATIONS. ACTUAL STABLE SLOPE ANGLE TO BE DETERMINED BY CONTRACTOR BASED ON CONDITIONS ENCOUNTERED AND CONTRACTORS PROPOSED CONSTRUCTION SURCHAGE.
5. REFER TO SPECIFICATION 01160 FOR SURVEY COORDINATES THAT SPECIFY SOIL REMOVAL CELL LIMITS.
6. SOUTHERN RAILROAD TRACKS TO BE REMOVED BY OTHERS PRIOR TO THE START OF WORK. RAILROAD TRACKS TO BE MAINTAINED AND REPLACED BY OTHERS DURING AND / OR AT COMPLETION OF WORK.
7. REFER TO DRAWINGS S-11 AND S-12 FOR SIZE AND LOCATION OF BRACING.
8. WHEN WORKING WITHIN ANY EXCAVATION AREA THE GROUND SURFACE OUTSIDE THE AREA MUST BE WITHIN 2 FT OF PRE-CONSTRUCTION GRADE.
9. ALL STRUCTURAL STEEL SHALL CONFORM TO ASTM A992 (GRADE 50) WITH EXCEPTION OF PIPE SECTIONS THAT SHALL CONFORM TO ASTM A500 (GRADE 46) UNLESS OTHERWISE NOTED.
10. ALL CONCRETE REINFORCING STEEL SHALL CONFORM TO ASTM A615 (GRADE 60).
11. SOLDIER PILE AND TREMIE CONCRETE PANELS SHALL HAVE A MINIMUM 28-DAY COMPRESSIVE STRENGTH OF 1000 PSI. TREMIE CONCRETE SHALL BE PLACED TO EL. 254.
12. EXCAVATION SUPPORT SYSTEM IS DESIGNED FOR SURCHARGES IN ACCORDANCE WITH DRAWING S-10.
13. CONTRACTOR IS RESPONSIBLE FOR THE MAINTAINING WATER LEVELS A MINIMUM OF 1 FT BELOW THE EXCAVATION SUBGRADE. REFER TO DEWATERING DRAWINGS.
14. ALL WELDING SHALL CONFORM TO THE LATEST EDITION OF AWSD1.1 STRUCTURAL WELDING CODE, ELECTRODES SHALL BE E70XX.

GENERAL CONSTRUCTION SEQUENCE:

1. PRETRENCH AS NECESSARY AND INSTALL GUIDEWALLS.
2. EXCAVATE SPTC WALL IN PANELS. (CONTRACTOR TO DETERMINE PANEL LAYOUT)
3. PLACE SOLDIER PILES IN WALL PANELS AND PLACE TREMIE CONCRETE TO EL. 254.
4. INSTALL TOE PINS.
5. CONDUCT EXCAVATION IN ANY ONE OF THE FOUR EXCAVATION AREAS LEAVING THE REMAINING EXCAVATION AREAS UNEXCAVATED.
6. BACKFILL AND COMPACT EXCAVATION AREA TO FINAL GRADE WITH APPROVED MATERIAL IN 10 IN. LIFTS TO GRADE. REFER TO SPECIFICATION 02201 EARTHWORK.
7. REPEAT STEPS 5 THROUGH 6 FOR EACH OF THE REMAINING EXCAVATION AREAS. AT NO TIME SHALL THE GROUND SURFACE IN AN EXCAVATION AREA OR CELL ADJACENT TO AN EXCAVATION AREA WHERE EXCAVATION IS TAKING PLACE BE BELOW EXISTING OR FINAL GRADE.

ORIGINAL SCALE APPLIES TO 22"X34" DRAWING
0 20 40 60 FT

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USE THE GRAPHIC SCALE BAR(S) TO DETERMINE THE ACTUAL SCALE(S) OF THIS DRAWING.

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Professional Engineer's Name: XXX
Professional Engineer's No.: XXX
State: XXX
Date Signed:
Project Mgr.: DRS
Designed by: DRS
Drawn by: BV

DRAFT
FOR EPA REVIEW

PREPARED BY: HALEY & ALDRICH
FOR: ARCADIS
ARCADIS U.S., INC.

GENERAL ELECTRIC COMPANY
FLETCHER'S PAINT WORKS AND STORAGE FACILITY SUPERFUND SITE
MILFORD, NEW HAMPSHIRE
FINAL (100%) DESIGN REPORT

SOIL REMOVAL SLOPES AND SUPPORT OF EXCAVATION SYSTEM LAYOUT - MILL STREET AREA

HALEY & ALDRICH Project No. 32608-003
Date NOVEMBER 2012
HALEY & ALDRICH, Inc.
465 Medford Street
Boston, MA 02129
617.886.7400

S-9

CITY: SYRACUSE-NY LYR:ON=*;OFF=REF*
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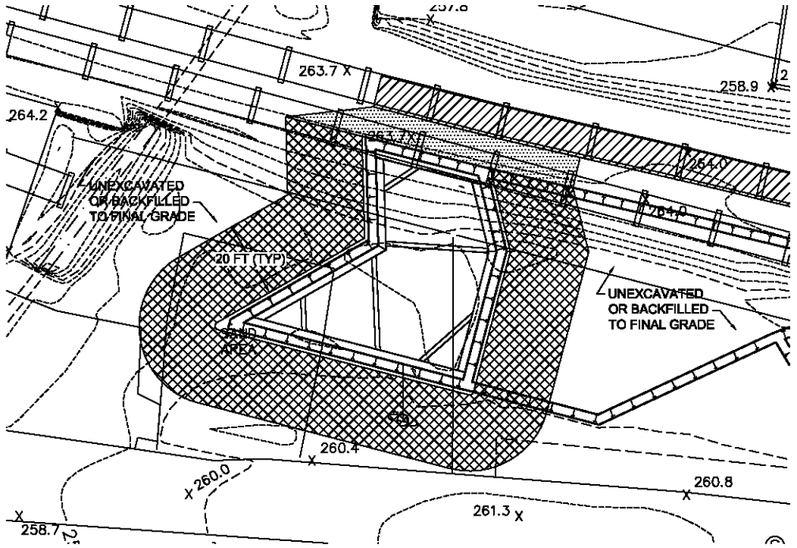
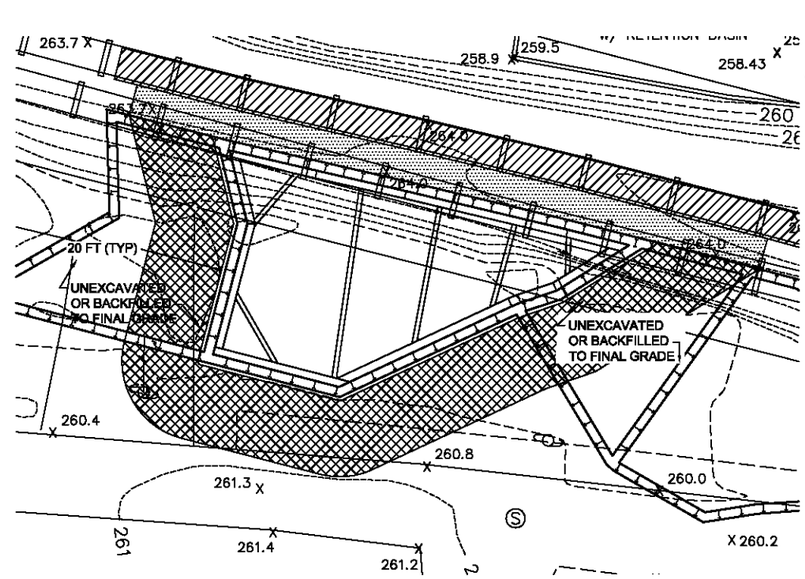
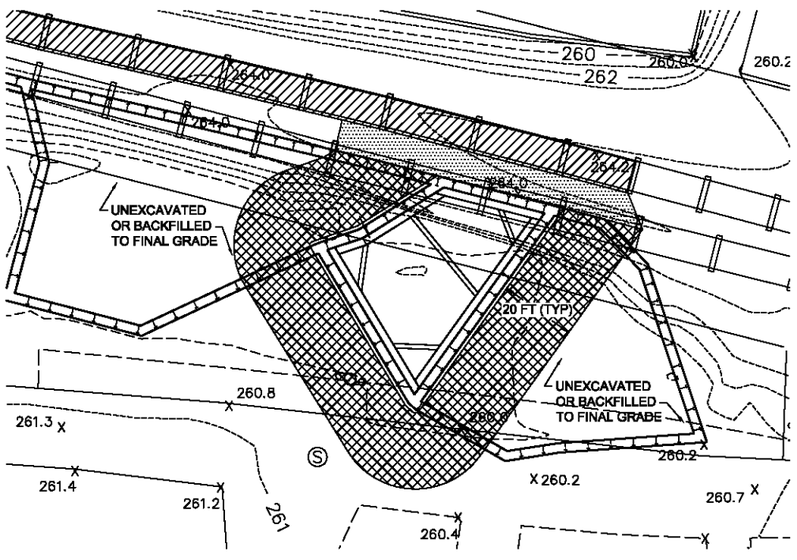


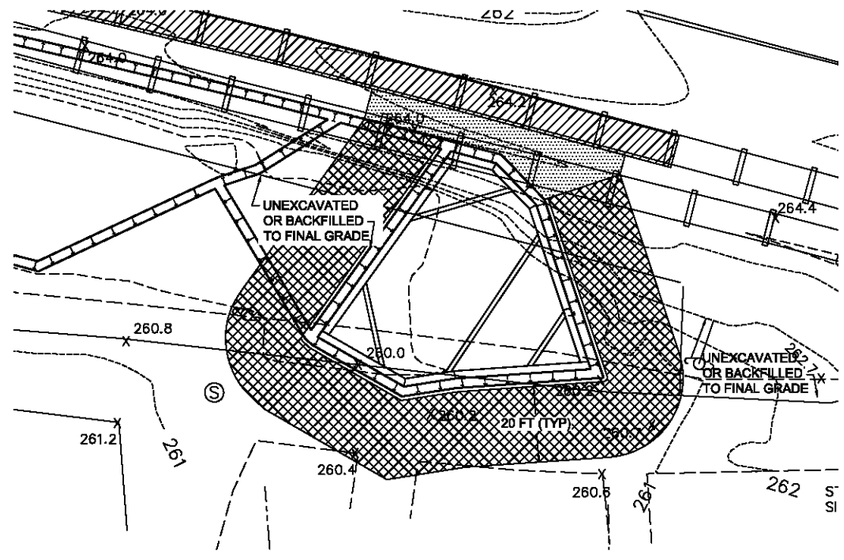
EXCAVATION AREA 1



EXCAVATION AREA 2



EXCAVATION AREA 3



EXCAVATION AREA 4

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S

LEGEND:

- RAILROAD SURCHARGE OF 2940 PSF
- CONSTRUCTION SURCHARGE NOT TO EXCEED 600 PSF.
- NO CONSTRUCTION SURCHARGE ALLOWED DURING EXCAVATION

NOTE:

1. SEE DRAWING S-9 FOR GENERAL NOTES.

ORIGINAL SCALE APPLIES TO 22"X34" DRAWING

0 20 40 60 FT

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Professional Engineer's No.: XXX		
State: XXX	Date Signed	
Project Mgr.: DRS	Designed by: DRS	Drawn by: BV

DRAFT
FOR EPA REVIEW

PREPARED BY: HALEY & ALDRICH
FOR: ARCADIS
ARCADIS U.S., INC.

GENERAL ELECTRIC COMPANY
FLETCHER'S PAINT WORKS AND STORAGE FACILITY SUPERFUND SITE
MILFORD, NEW HAMPSHIRE
FINAL (100%) DESIGN REPORT

CONSTRUCTION SURCHARGE AND EXCAVATION LIMITATIONS - MILL STREET AREA

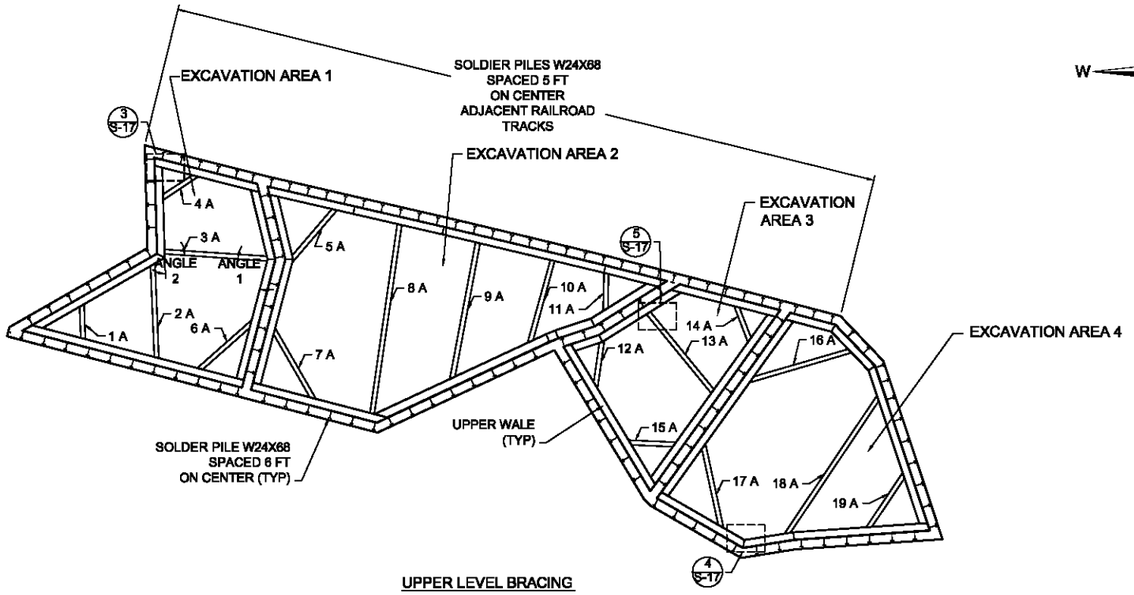
HALEY & ALDRICH Project No. 32608-003

Date NOVEMBER 2012

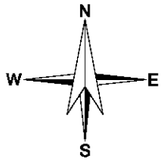
HALEY & ALDRICH, Inc.
465 Medford Street
Boston, MA 02129
617.886.7400

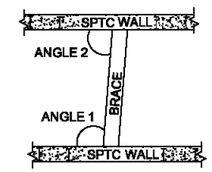
S-10

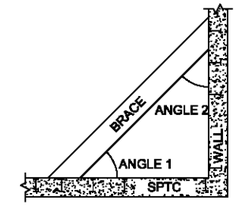
CITY: SYRACUSE-NY LYROM-*-OFF-REP
V:\ENVCAD\SYRACUSE\ACT\CI\00208\00320\00008\DWG\CONTRACTOR-SITE\HA\32608_S10_11_12.dwg LAYOUT: S-10 SAVED: 11/21/2012 1:31 PM ACADVER: 18.1S (LMS TECH) PAGESETUP: LD28-PDF PLOTSTYLETABLE: PLTCONT1.CTB PLOTTED: 11/21/2012 1:31 PM BY: SARTORI, KATHERINE



UPPER LEVEL BRACING



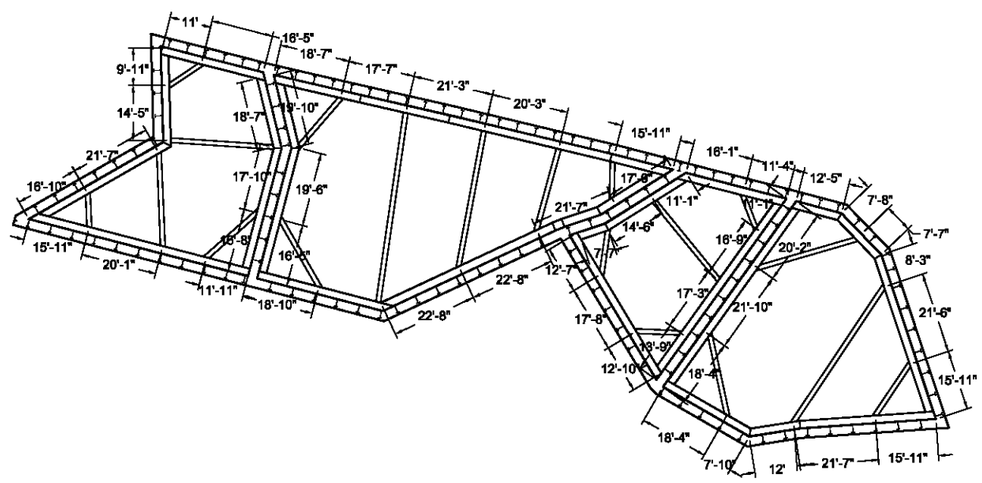




BRACING SCHEDULE:

MEMBER	UPPER BRACE	*ANGLE 1	*ANGLE 2	CENTER LINE EL.
1 A	18"Øx1/2" PIPE	73.1°	62.5°	259.5
2 A	18"Øx1/2" PIPE	73.1°	62.5°	259.5
3 A	18"Øx1/2" PIPE	72.9°	84.5°	259.5
4 A	18"Øx1/2" PIPE	47.8°	58.1°	259.5
5 A	18"Øx1/2" PIPE	62.3°	54.3°	259.5
6 A	18"Øx1/2" PIPE	56.0°	33.6°	259.5
7 A	18"Øx1/2" PIPE	44.7°	45.5°	259.5
8 A	20"Øx1/2" PIPE	83.7°	94.6°	259.5
9 A	20"Øx1/2" PIPE	125.6°	92.8°	259.5
10 A	18"Øx1/2" PIPE	130.4°	88.0°	259.5
11 A	18"Øx1/2" PIPE	123.7°	101.7°	259.5
12 A	18"Øx1/2" PIPE	63.6°	39.1°	259.5
13 A	18"Øx1/2" PIPE	105°	97.3°	259.5
14 A	18"Øx1/2" PIPE	56.9°	54.4°	259.5
15 A	18"Øx1/2" PIPE	56.7°	56.6°	259.5
16 A	18"Øx1/2" PIPE	62.8°	38.1°	259.5
17 A	18"Øx1/2" PIPE	47.9°	47.9°	259.5
18 A	20"Øx1/2" PIPE	47.3°	52.2°	259.5
19 A	18"Øx1/2" PIPE	52.2°	52.2°	259.5
UPPER WALE	W 24x146	NA	NA	259.5

*CONTRACTOR TO LOCATE BRACING BASED ON PLAN DIMENSIONS. CONFIRM ANGLES IN BRACING SCHEDULE AND INFORM DESIGN ENGINEER OF ANY DIFFERENCES.



UPPER LEVEL BRACING
LAYOUT

NOTES:

1. SEE DRAWING S-9 FOR GENERAL NOTES AND CELL EXCAVATION DEPTHS.
2. ALL DIMENSIONS AND ANGLES ARE APPROXIMATE AND REFER TO CENTER LINE OF BRACING.
3. CONTRACTOR SHALL CONFIRM ALL BRACING DIMENSIONS IN FIELD PRIOR TO FABRICATION AND INSTALLATION.

ORIGINAL SCALE APPLIES TO 22"X34" DRAWING
0 20 40 60 FT

THIS DRAWING WAS PREPARED AT THE SCALE(S) INDICATED. INACCURACIES IN THE STATED SCALE(S) MAY BE INTRODUCED WHEN DRAWINGS ARE REPRODUCED. USE THE GRAPHIC SCALE BAR(S) TO DETERMINE THE ACTUAL SCALE(S) OF THIS DRAWING.

No.	Date	Revisions	Init

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Professional Engineer's Name: XXX
Professional Engineer's No.: XXX
State: XXX
Date Signed:
Project Mgr.: DRS
Designed by: DRS
Drawn by: BV

DRAFT
FOR EPA REVIEW

PREPARED BY: HALEY & ALDRICH
FOR: ARCADIS
ARCADIS U.S., INC.

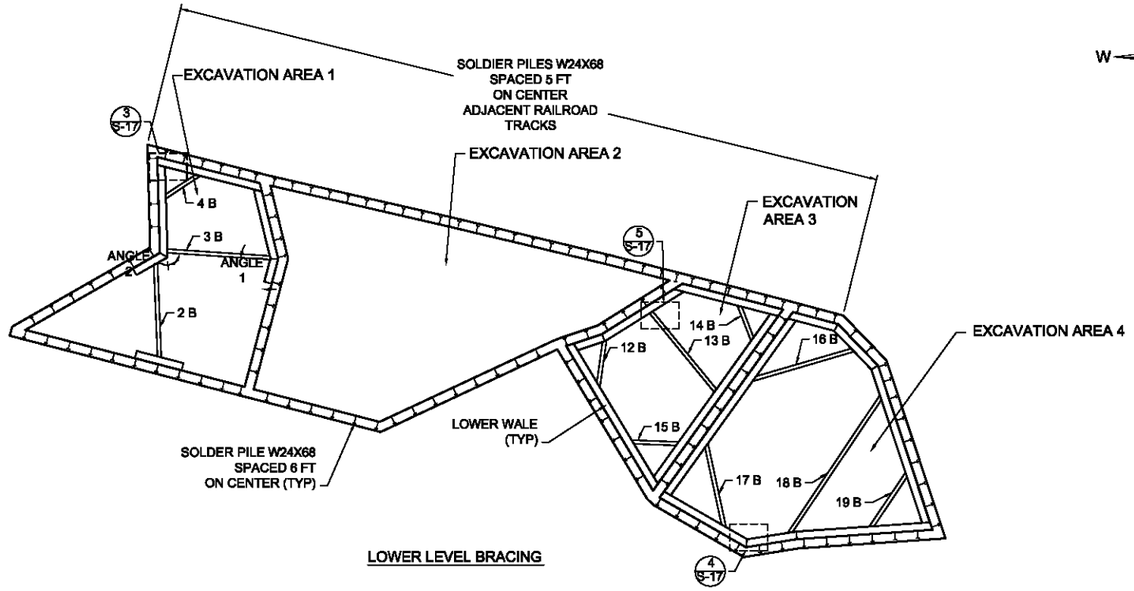
GENERAL ELECTRIC COMPANY
FLETCHER'S PAINT WORKS AND STORAGE FACILITY SUPERFUND SITE
MILFORD, NEW HAMPSHIRE
FINAL (100%) DESIGN REPORT

UPPER LEVEL BRACING LAYOUT - MILL STREET AREA

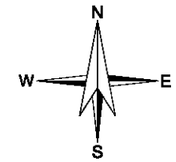
HALEY & ALDRICH Project No. 32608-003
Date NOVEMBER 2012
HALEY & ALDRICH, Inc.
465 Medford Street
Boston, MA 02129
617.886.7400

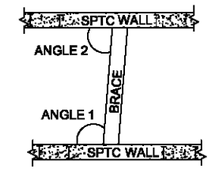
S-11

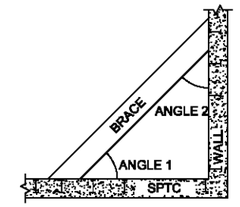
CITY: SYRACUSE,NY LYRONM-*OFF-*REF*
V:\ENVCAD\SYRACUSE\ACT\B0020685\00\20\00006\DWG\CONTRACT\OFF-SITE\HA\20685_S10_11_12.dwg LAYOUT: S-11 SAVED: 11/21/2012 1:31 PM ACADVER: 18.1S (LMS TECH) PAGESETUP: LD28-PDF PLOTSTYLETABLE: PLTCONT1.CTB PLOTTED: 11/21/2012 1:32 PM BY: SARTORI, KATHERINE



LOWER LEVEL BRACING



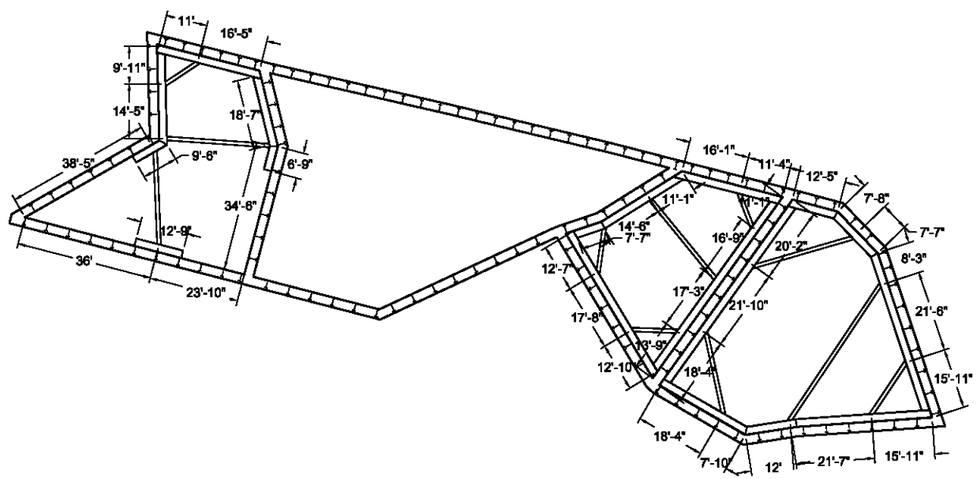




BRACING SCHEDULE:

MEMBER	LOWER BRACE	ANGLE 1*	ANGLE 2*	CENTER LINE EL.
2 B	18"Øx1/2" PIPE	62.5°	73.1°	251
3 B	18"Øx1/2" PIPE	79.2°	84.5°	251
4 B	18"Øx1/2" PIPE	58.1°	47.8°	251
12 B	18"Øx1/2" PIPE	63.6°	39.1°	249
13 B	18"Øx1/2" PIPE	105.0°	97.3°	249
14 B	18"Øx1/2" PIPE	56.9°	54.4°	249
15 B	18"Øx1/2" PIPE	56.7°	56.6°	249
16 B	18"Øx1/2" PIPE	62.3°	38.1°	249
17 B	18"Øx1/2" PIPE	47.9°	47.9°	249
18 B	18"Øx1/2" PIPE	47.3°	52.2°	249
19 B	18"Øx1/2" PIPE	52.2°	52.2°	249
EXC. AREA 1 WALE	W 24x146	NA	NA	251
EXC. AREAS 3 & 4 WALE	W 24x146	NA	NA	249

*CONTRACTOR TO LOCATE BRACING BASED ON PLAN DIMENSIONS. CONFIRM ANGLES IN BRACING SCHEDULE AND INFORM DESIGN ENGINEER OF ANY DIFFERENCES.



LOWER LEVEL BRACING
LAYOUT

NOTES:

1. SEE DRAWING S-11 FOR NOTES.

ORIGINAL SCALE APPLIES TO 22"X34" DRAWING

0 20 40 60 FT

THIS DRAWING WAS PREPARED AT THE SCALE(S) INDICATED. INACCURACIES IN THE STATED SCALE(S) MAY BE INTRODUCED WHEN DRAWINGS ARE REPRODUCED. USE THE GRAPHIC SCALE BAR(S) TO DETERMINE THE ACTUAL SCALE(S) OF THIS DRAWING.

No.	Date	Revisions	Init

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Professional Engineer's Name: XXX
Professional Engineer's No.: XXX
State: XXX
Date Signed:
Project Mgr.: DRS
Designed by: DRS
Drawn by: BV

DRAFT
FOR EPA REVIEW

PREPARED BY: HALEY & ALDRICH
FOR: ARCADIS
ARCADIS U.S., INC.

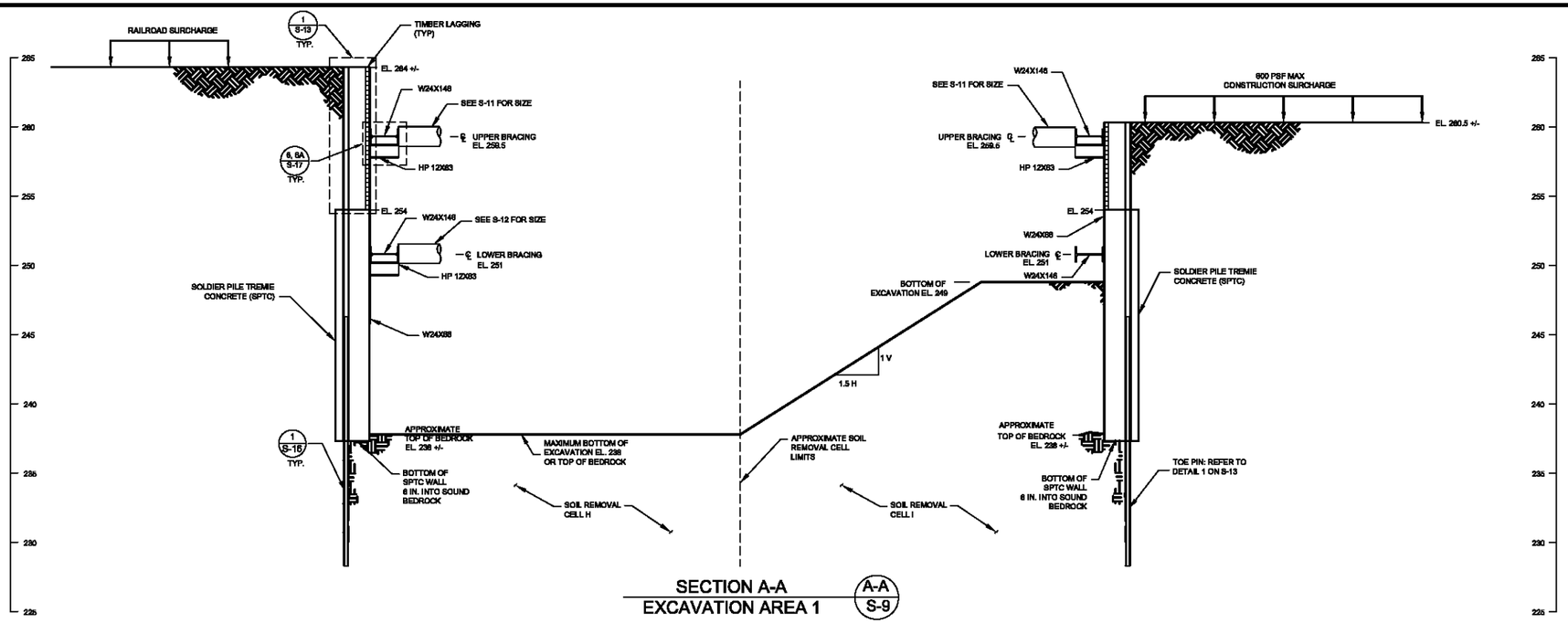
GENERAL ELECTRIC COMPANY
FLETCHER'S PAINT WORKS AND STORAGE FACILITY SUPERFUND SITE
MILFORD, NEW HAMPSHIRE
FINAL (100%) DESIGN REPORT

LOWER LEVEL BRACING LAYOUT - MILL STREET AREA

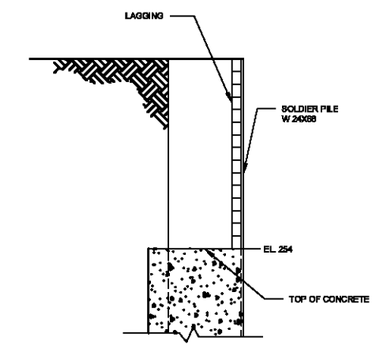
HALEY & ALDRICH Project No. 32608-003
Date NOVEMBER 2012
HALEY & ALDRICH, Inc.
465 Medford Street
Boston, MA 02129
617.886.7400

S-12

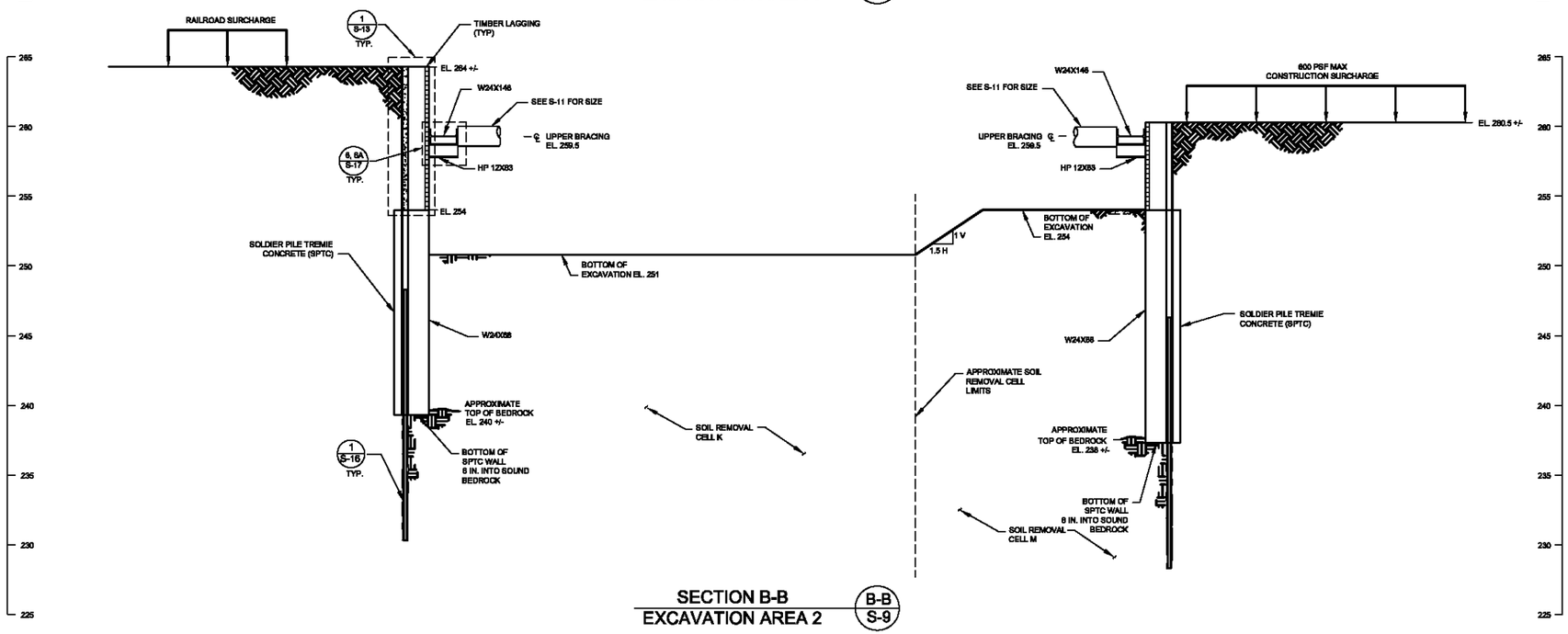
CITY: SYRACUSE-NY LYRON=*OFF=*REF*
V:\ENVCAD\SYRACUSE\ACTV\B0020985\0002\00000\DWG\CONTRACT\OFF-SITE\HA\32985_S10, 11, 12.dwg LAYOUT: S-12 SAVED: 11/21/2012 1:32 PM ACADVER: 18.1S (LMS TECH) PAGESETUP: LD28-PDF PLOTSTYLETABLE: PLTCONTI.CTB PLOTTED: 11/21/2012 1:32 PM BY: SARTORI, KATHERINE



SECTION A-A
EXCAVATION AREA 1
A-A / S-9



DETAIL 1
TIMBER LAGGING OF SPTC WALL
1 / S-13



SECTION B-B
EXCAVATION AREA 2
B-B / S-9

NOTES:

1. SEE S-9 FOR GENERAL NOTES AND CELL EXCAVATION DEPTHS.
2. SEE S-10 FOR SURCHARGE LIMITATIONS.
3. TOP OF BEDROCK ELEVATIONS ARE APPROXIMATE.
4. TIMBER LAGGING SHALL BE SOUTHERN YELLOW PINE, NO. 2 OR BETTER, HAVING A Fb = 850 PSI AND A Fc = 550 PSI, OR APPROVED EQUAL.

ORIGINAL SCALE APPLIES TO 22"X34" DRAWING
0 5 10 15FT

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Professional Engineer's No.: XXX
State: XXX
Date Signed:
Project Mgr.: DRS
Designed by: DRS
Drawn by: BV

DRAFT
FOR EPA REVIEW

PREPARED BY: HALEY & ALDRICH
FOR: ARCADIS
ARCADIS U.S., INC.

GENERAL ELECTRIC COMPANY
FLETCHER'S PAINT WORKS AND STORAGE FACILITY SUPERFUND SITE
MILFORD, NEW HAMPSHIRE
FINAL (100%) DESIGN REPORT

ELEVATION SECTIONS - SHEET 1 OF 3 - MILL STREET AREA

HALEY & ALDRICH Project No. 32608-003
Date NOVEMBER 2012
HALEY & ALDRICH, Inc.
465 Medford Street
Boston, MA 02129
617.886.7400

S-13

CITY: SYRACUSE-NY LYRCON=*;OFF=REF
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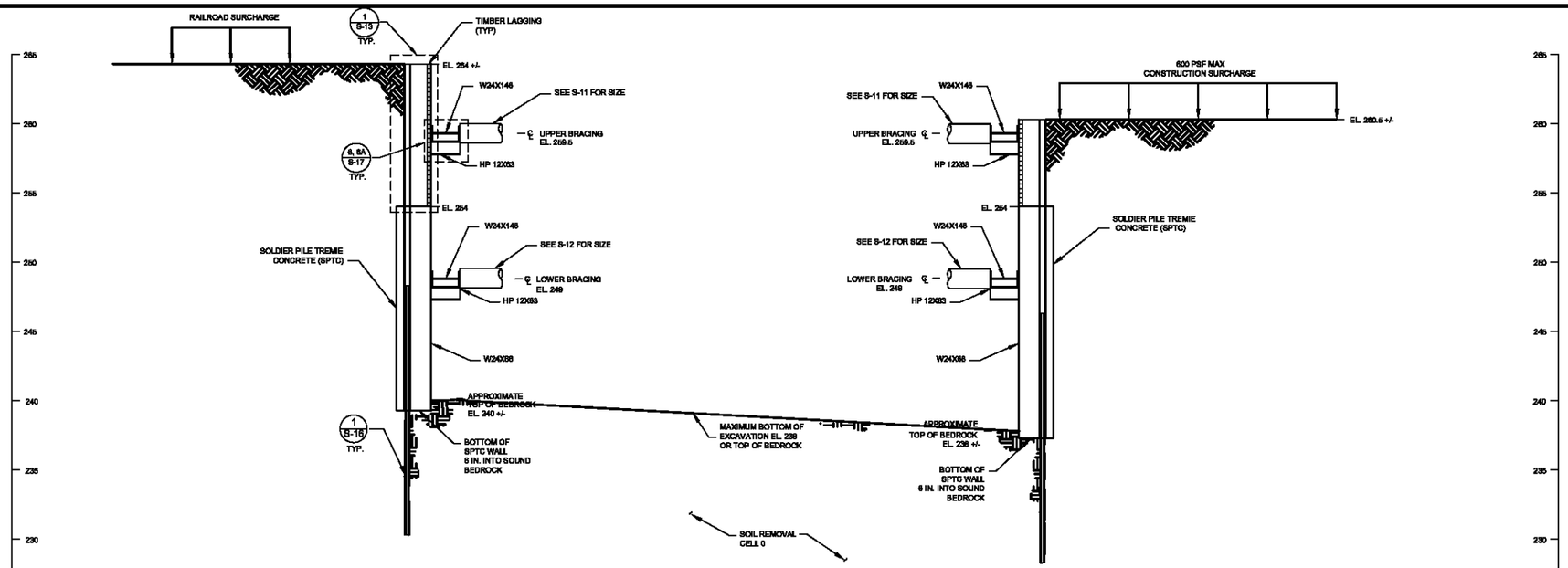
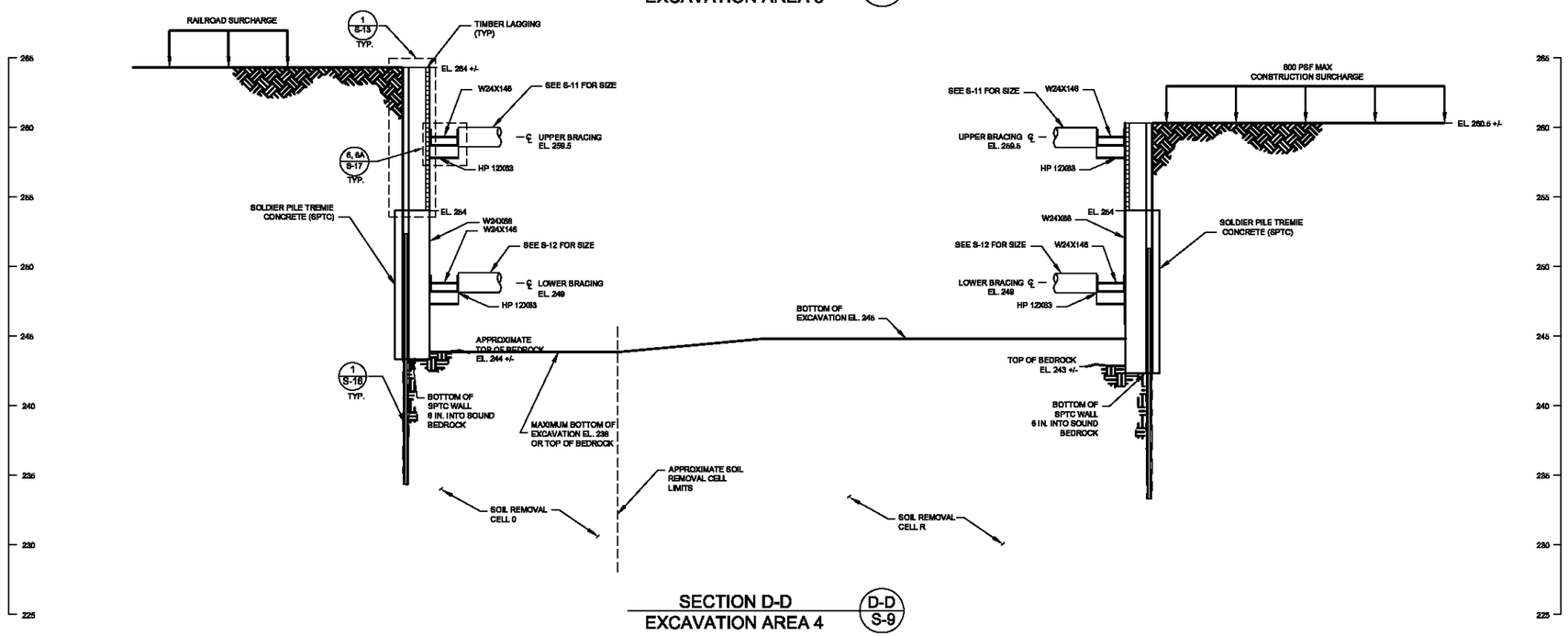


SECTION C-C
EXCAVATION AREA 3

C-C
S-9



SECTION D-D
EXCAVATION AREA 4

D-D
S-9

NOTES:

1. SEE DRAWING S-13 FOR NOTES.

ORIGINAL SCALE APPLIES TO 22"X34" DRAWING

0 5 10 15 FT

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Professional Engineer's Name: XXX
Professional Engineer's No.: XXX
State: XXX | Date Signed:
Project Mgr.: DRS | Designed by: DRS | Drawn by: BV

DRAFT
FOR EPA REVIEW

PREPARED BY: HALEY & ALDRICH
FOR: ARCADIS
ARCADIS U.S., INC.

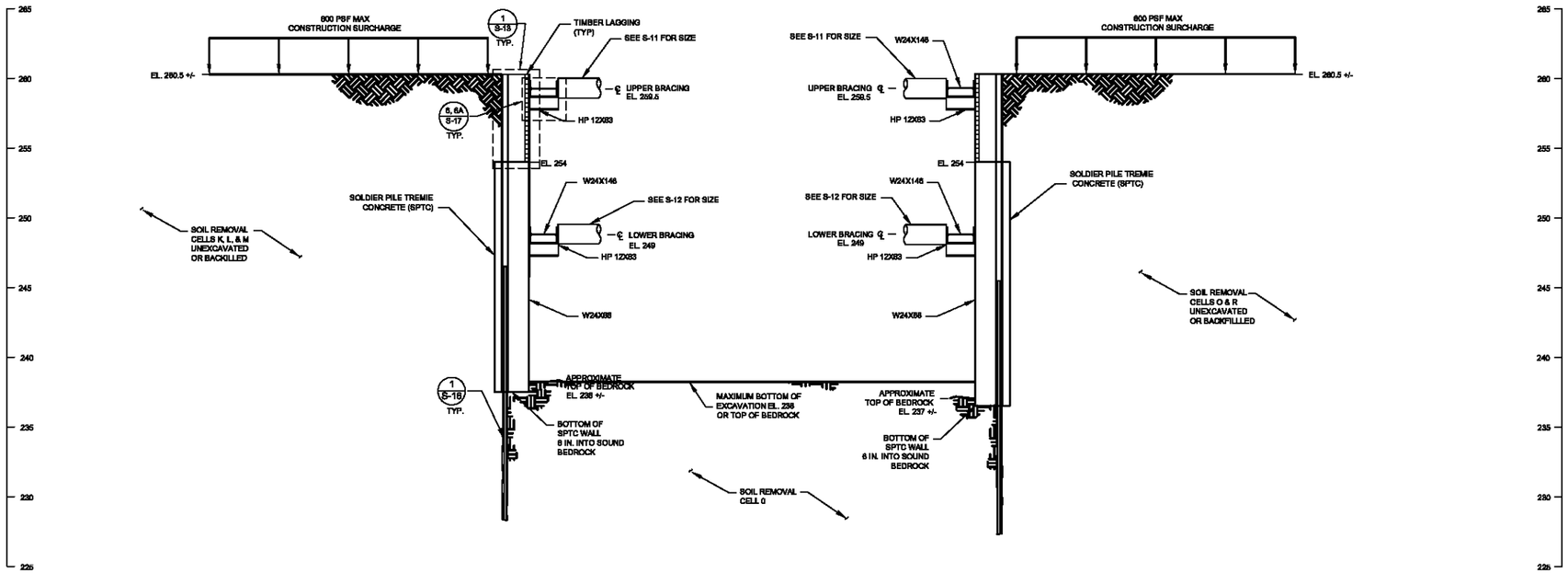
GENERAL ELECTRIC COMPANY
FLETCHER'S PAINT WORKS AND STORAGE FACILITY SUPERFUND SITE
MILFORD, NEW HAMPSHIRE
FINAL (100%) DESIGN REPORT

ELEVATION SECTIONS - SHEET 2 OF 3 - MILL STREET AREA

HALEY & ALDRICH Project No. 32608-003
Date NOVEMBER 2012
HALEY & ALDRICH, Inc.
465 Medford Street
Boston, MA 02129
617.886.7400

S-14

CITY: SYRACUSE-NY LYRON=*OFF=*REF*
V:\ENVCAD\BYRACUSE\ACT\B0020685\00\02\00006\DWG\CONTRACT\OFF-SITE\HS\A32685_S-13, 14, 15, 17.dwg LAYOUT: S-14 SAVED: 11/21/2012 1:34 PM ACADVER: 18.1S (LMS TECH) PAGESETUP: LD28-PDF PLOTSTYLETABLE: PLTCONT.CTB PLOTTED: 11/21/2012 1:34 PM BY: BARTORI, KATHERINE



SECTION E-E
EXCAVATION AREA 3

E-E
S-9

NOTES:

1. SEE DRAWING S-13 FOR NOTES.

ORIGINAL SCALE APPLIES TO 22"X34" DRAWING

0 5 10 15 FT

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Professional Engineer's Name: XXX
Professional Engineer's No.: XXX
State: XXX
Date Signed:
Project Mgr.: DRS
Designed by: DRS
Drawn by: BV

DRAFT
FOR EPA REVIEW

PREPARED BY: HALEY & ALDRICH
FOR: ARCADIS
ARCADIS U.S., INC.

GENERAL ELECTRIC COMPANY
FLETCHER'S PAINT WORKS AND STORAGE FACILITY SUPERFUND SITE
MILFORD, NEW HAMPSHIRE
FINAL (100%) DESIGN REPORT

ELEVATION SECTIONS - SHEET 3 OF 3 - MILL STREET AREA

HALEY & ALDRICH Project No.
32608-003

Date
NOVEMBER 2012

HALEY & ALDRICH, Inc.
465 Medford Street
Boston, MA 02129
617.886.7400

S-15

CITY: SYRACUSE-NY LYRON=*OFF=*REF*
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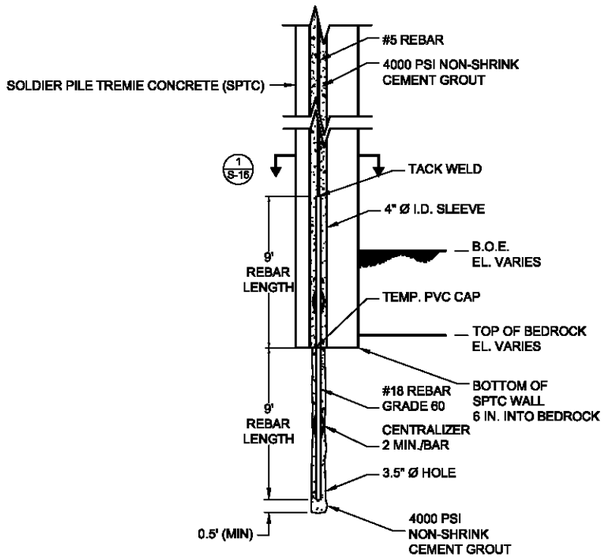
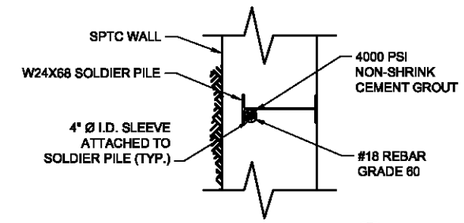
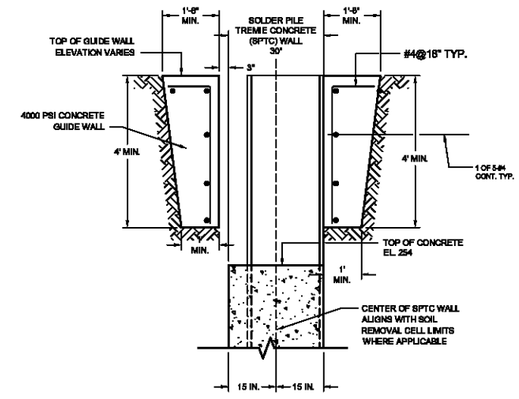


DETAIL 1 (1 / S-13,14,15)
WALL TOE PIN DETAIL
NOT TO SCALE



TOE PIN SECTION 1 (1 / S-16)
NOT TO SCALE



SPTC GUIDE WALL DETAIL (3 / S-9)
NOT TO SCALE

NOTES:

1. AFTER CURING OF THE WALL PANEL ADVANCE A MINIMUM 3.5 INCH DIAMETER HOLE INTO ROCK, 9.5 FT BELOW THE BOTTOM OF THE SPTC WALL, THROUGH 4 INCH DIAMETER SLEEVE USING DRILLING METHODS THAT MAINTAIN A STABLE HOLE.
2. PLACE GROUT IN DRILL HOLE AND SLEEVE USING TREMIE METHODS. AFTER GROUT BEGINS FLOWING FROM COLLAR OF SLEEVE PLACE PACKER AT COLLAR OF SLEEVE AND INJECT ADDITIONAL GROUT AT A PRESSURE OF 30 PSI UNTIL GROUT INJECTION RATE IS LESS THAN 0.1 GPM FOR 5 MINUTES.
3. IMMEDIATELY AFTER PRESSURE GROUTING INSTALL ROCK DOWELS INTO THE GROUTED SLEEVE USING CENTRALIZER AS SHOWN.

ORIGINAL SCALE APPLIES TO 22"X34" DRAWING

AS SHOWN

THIS DRAWING WAS PREPARED AT THE SCALE(S) INDICATED. INACCURACIES IN THE STATED SCALE(S) MAY BE INTRODUCED WHEN DRAWINGS ARE REPRODUCED. USE THE GRAPHIC SCALE BAR(S) TO DETERMINE THE ACTUAL SCALE(S) OF THIS DRAWING.

NOT TO SCALE

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Professional Engineer's Name: XXX
Professional Engineer's No.: XXX
State: XXX
Date Signed:
Project Mgr.: DRS
Designed by: DRS
Drawn by: BV

DRAFT
FOR EPA REVIEW

PREPARED BY: HALEY & ALDRICH
FOR: ARCADIS
ARCADIS U.S., INC.

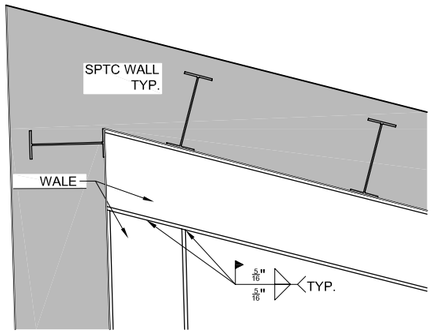
GENERAL ELECTRIC COMPANY
FLETCHER'S PAINT WORKS AND STORAGE FACILITY SUPERFUND SITE
MILFORD, NEW HAMPSHIRE
FINAL (100%) DESIGN REPORT

DETAILS - SHEET 1 OF 2 - MILL STREET AREA

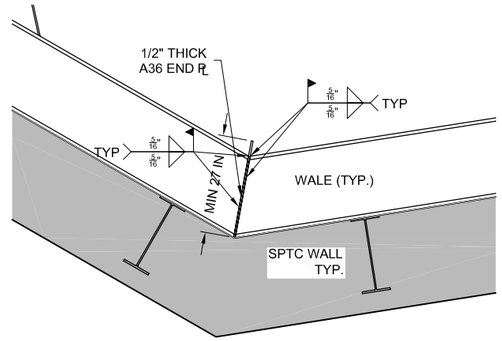
HALEY & ALDRICH Project No. 32608-003
Date NOVEMBER 2012
HALEY & ALDRICH, Inc.
465 Medford Street
Boston, MA 02129
617.886.7400

S-16

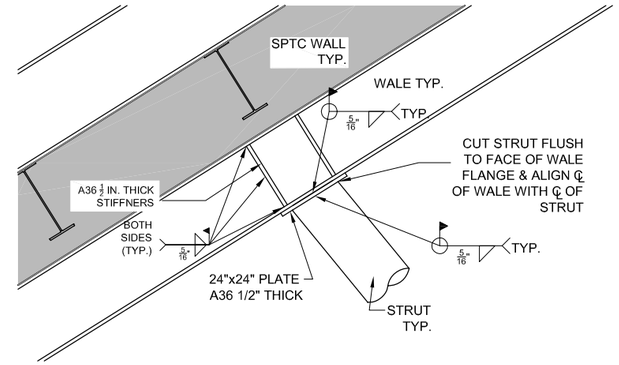
CITY: SYRACUSE-NY LYRCON=*OFF=*REF* V:\ENVCAD\SYRACUSE\ACT\C\B0020985\0002\00000\DWG\CONTRACT\OFF-SITE*\A20985_S-13, 14, 15, 17.dwg LAYOUT: S-16 SAVED: 11/21/2012 1:34 PM ACADVER: 18.1S (LMS TECH) PAGESETUP: LD28-PDF PLOTSTYLETABLE: PLTCONT.CTB PLOTTED: 11/21/2012 1:35 PM BY: SARTORI, KATHERINE



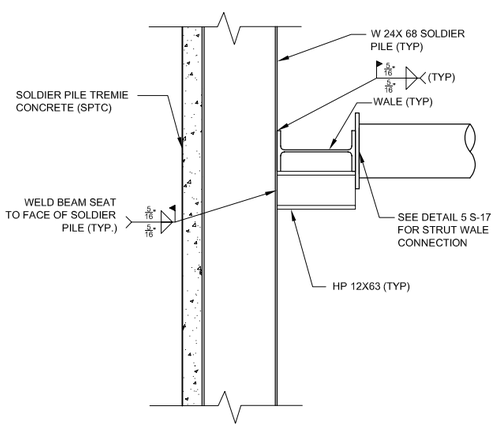
DETAIL 3 — 3 / S-11, 12
WALE TO WALE CONNECTION
NOT TO SCALE



DETAIL 4 — 4 / S-11, 12
WALE TO WALE CONNECTION
NOT TO SCALE



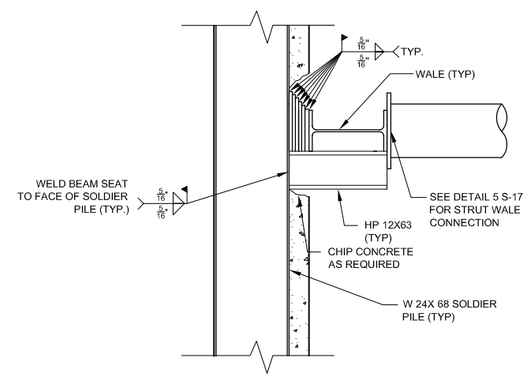
DETAIL 5 — 5 / S-11, 12
STRUT TO WALE CONNECTION
NOT TO SCALE



NOTE:

1. WELD BEAM SEAT AT EVERY OTHER SOLDIER PILE (TYP.)

DETAIL 6 — 6 / S-13,14,16
BEAM SEAT CONNECTION
SOLDIER PILE FLUSH WITH FACE OF WALL
NOT TO SCALE



NOTES:

1. WELD BEAM SEAT AT EVERY OTHER SOLDIER PILE (TYP.)
2. SHIM WITH STEEL PLATES AS REQUIRED

DETAIL 6A — 6A / S-13,14,15
BEAM SEAT CONNECTION
SOLDIER PILE OFF FACE OF WALL
NOT TO SCALE

ORIGINAL SCALE APPLIES TO 22"X34" DRAWING

AS SHOWN

THIS DRAWING WAS PREPARED AT THE SCALE(S) INDICATED. INACCURACIES IN THE STATED SCALE(S) MAY BE INTRODUCED WHEN DRAWINGS ARE REPRODUCED. NOT TO SCALE
USE THE GRAPHIC SCALE BAR(S) TO DETERMINE THE ACTUAL SCALE(S) OF THIS DRAWING.

No.	Date	Revisions	Init

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Professional Engineer's Name: XXX
Professional Engineer's No.: XXX
State: XXX
Date Signed:
Project Mgr.: DRS
Designed by: DRS
Drawn by: BV

DRAFT
FOR EPA REVIEW

PREPARED BY: HALEY & ALDRICH
FOR: ARCADIS
ARCADIS U.S., INC.

GENERAL ELECTRIC COMPANY
FLETCHER'S PAINT WORKS AND STORAGE FACILITY SUPERFUND SITE
MILFORD, NEW HAMPSHIRE
FINAL (100%) DESIGN REPORT

DETAILS - SHEET 2 OF 2 - MILL STREET AREA

HALEY & ALDRICH Project No. 32608-003
Date NOVEMBER 2012
HALEY & ALDRICH, Inc.
465 Medford Street
Boston, MA 02129
617.886.7400

S-17

CITY: SYRACUSE-NY LYR:ON=*;OFF=REF*
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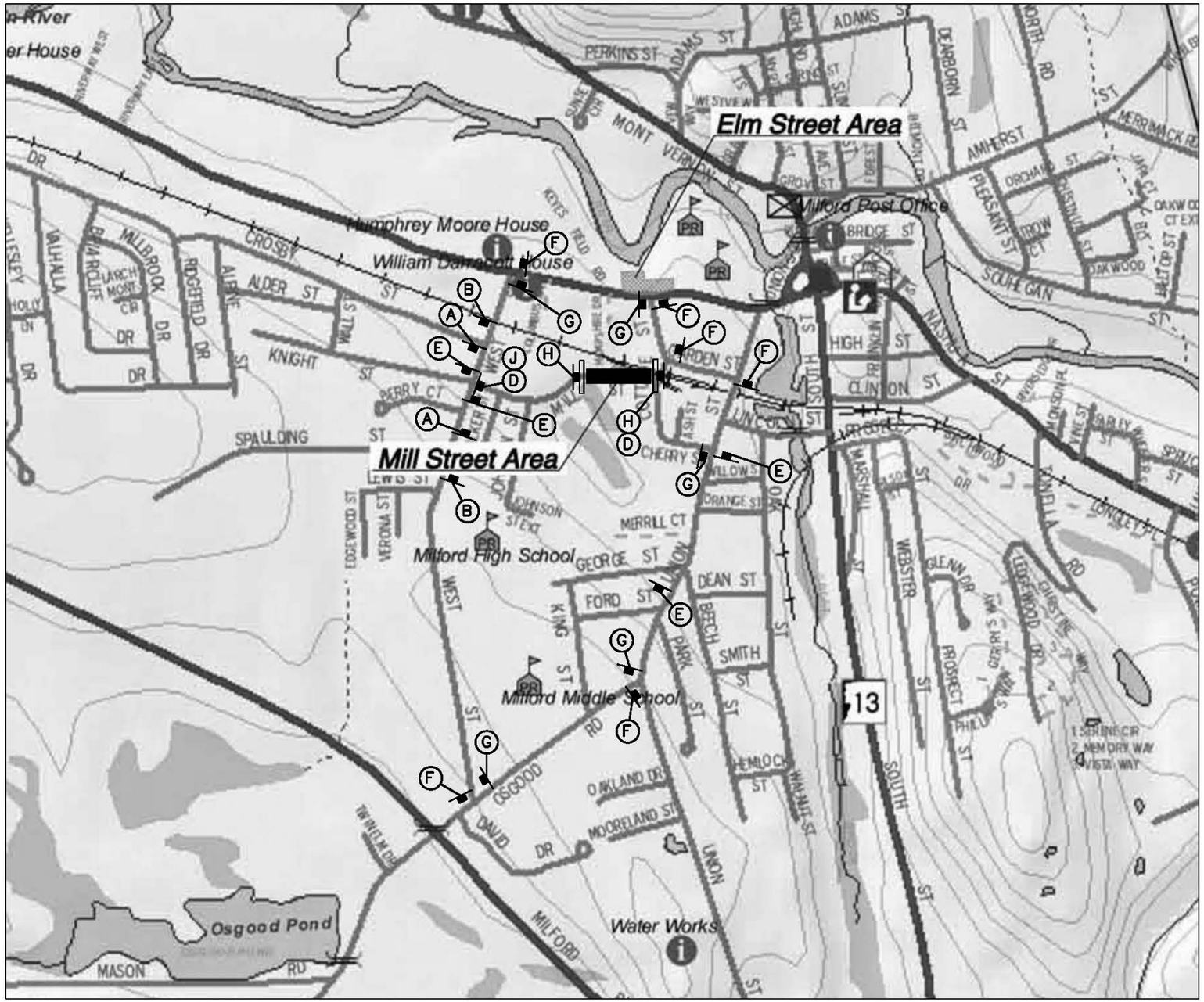


DETOUR PLAN MILL STREET

NOTES:

WHENEVER THE CLOSURE OCCURS, THE TOTAL DETOUR SIGNING AS INDICATED ON THIS PLAN SHALL BE IMPLEMENTED.

DETOUR SIGNS SHALL BE UNCOVERED AND VISIBLE TO TRAFFIC ONLY WHEN THE STREET CLOSURE IS IN EFFECT.

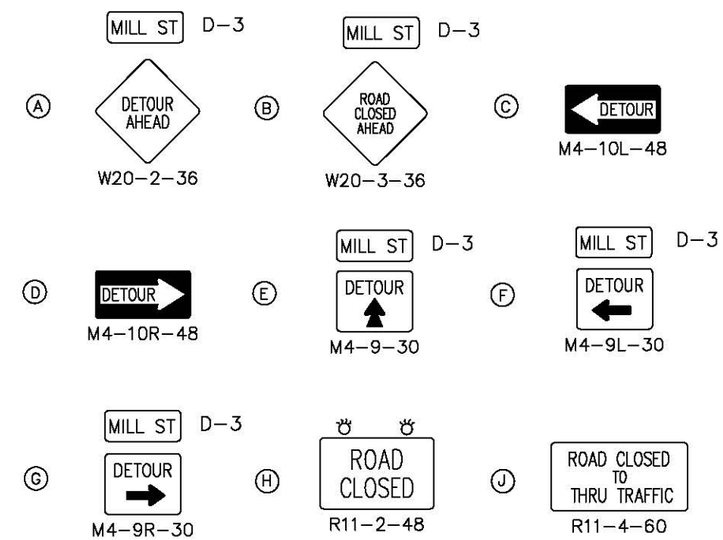
DISTANCE BETWEEN ADVANCE WARNING SIGNS IS 100' MINIMUM.

ALL MAINTENANCE OF TRAFFIC APPURTENANCES SHALL BE IN ACCORDANCE WITH NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION, MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES AND THE TOWN OF MILFORD STANDARDS.

MILL STREET DETOUR CANNOT BE DONE CONCURRENTLY WITH THE ELM STREET LANE CLOSURE.

WORK AREA

PORTABLE BARRICADE



CITY: SYRACUSE DIV/GROUP: ENVCAD DB: L. POSENAUER G. STOWELL L. FORAKER K.SARTORI PIC: P. FARR PM: C. AVERILL TM: C. AVERILL LYR: ON=*; OFF=*REF*
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XREFS: 20985X00 IMAGES: 20985X01.jpg PROJECTNAME: —

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Professional Engineer's Name: LOWELL W. McBURNEY
Professional Engineer's No.: 10767
State: NH | Date Signed: | Project Mgr.: CRA
Designed by: MAM | Drawn by: . | Checked by: .

DRAFT FOR EPA REVIEW

ARCADIS
ARCADIS U.S., INC.

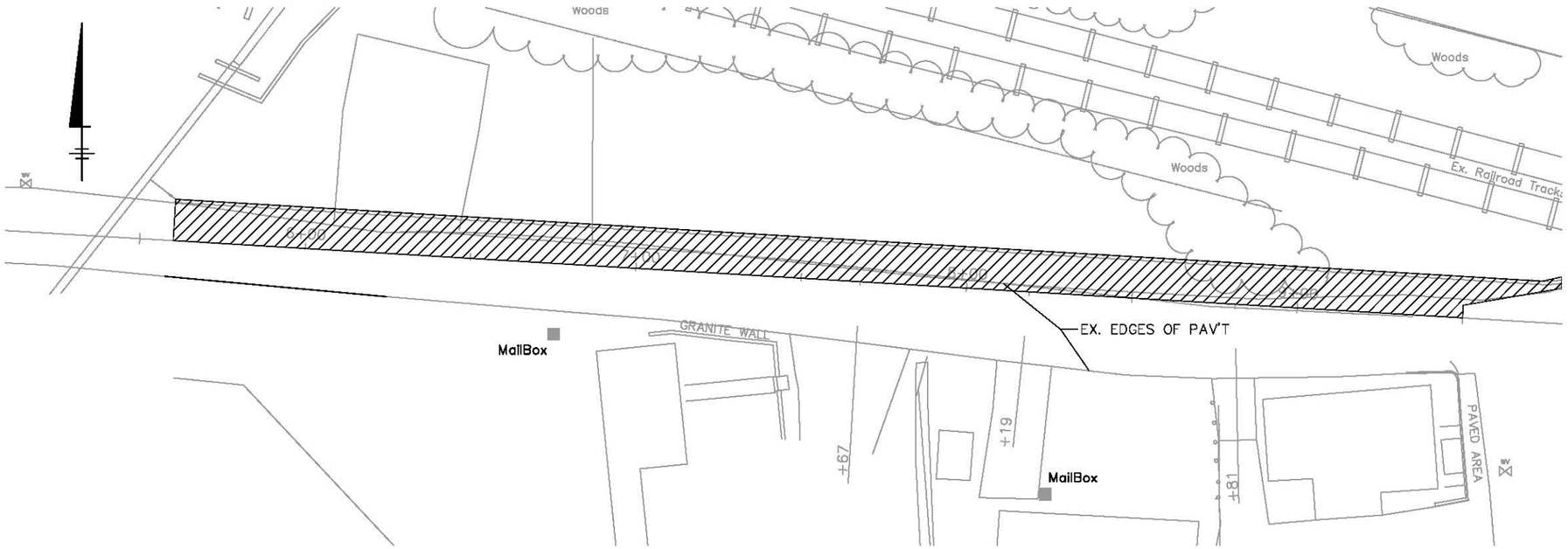
GENERAL ELECTRIC COMPANY
FLETCHER'S PAINT WORKS AND STORAGE FACILITY SUPERFUND SITE
MILFORD, NEW HAMPSHIRE
FINAL (100%) DESIGN REPORT

RECONSTRUCTION DETOUR PLAN - MILL STREET AREA

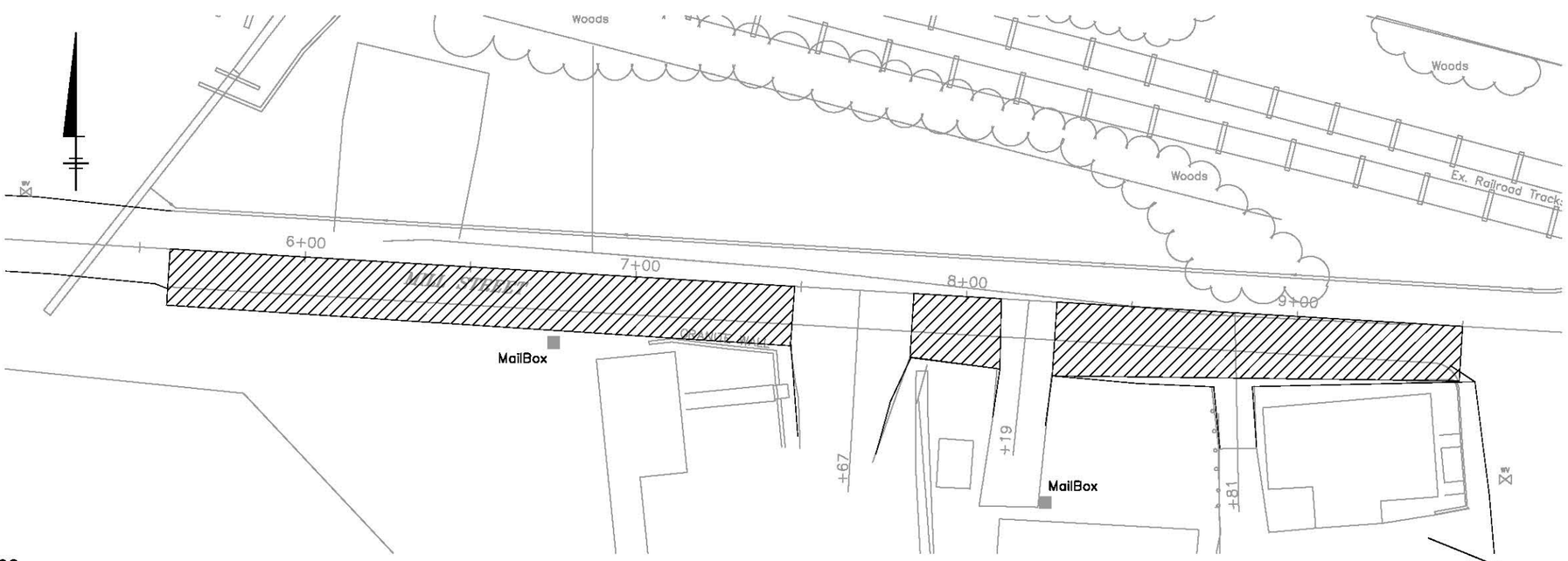
ARCADIS Project No. B0020985.0002.00006
Date NOVEMBER 2012

ARCADIS OF NEW YORK
6723 TOWPATH ROAD
P.O. BOX 66
SYRACUSE, NEW YORK
TEL. 315.446.9120

T-1



PHASE A



PHASE B

ALTERNATE ACCESS FROM COTTAGE STREET

CONSTRUCTION AT DRIVES

THE REMEDIAL ACTION CONTRACTOR SHALL MAKE REASONABLE PROVISIONS TO ALLOW RESIDENTIAL ACCESS AT ALL TIMES OR OTHERWISE ALLOW RESIDENTS TO PARK SAFELY WITHIN THE PROJECT WORK LIMITS WHEN ACCESS IS NOT POSSIBLE. THE MAXIMUM OUT OF SERVICE TIME FOR ANY RESIDENTIAL DRIVE SHALL BE 24 HOURS.

THE REMEDIAL ACTION CONTRACTOR SHALL PLAN/STAGE ALL ROAD RECONSTRUCTION WORK TO MAINTAIN SAFE ACCESS TO RESIDENTAL PROPERTY AT ALL TIMES OR PROVIDE SAFE PARKING WITHIN REASONABLE PROXIMITY TO RESIDENTIAL PROPERTY WHEN ACCESS IS UNAVAILABLE. PRIOR TO THE START OF CONSTRUCTION, THE REMEDIAL ACTION CONTRACTOR SHALL SUBMIT A PLAN FOR REVIEW BY THE DESIGN ENGINEER THAT OUTLINES ITS STRATEGY FOR THE MAINTENANCE OF SAFE ACCESS TO RESIDENTIAL PROPERTY AND/OR FOR ALLOWING RESIDENTS TO PARK SAFELY WITHIN THE PROJECT LIMITS WHEN ACCESS IS NOT POSSIBLE.

THE REMEDIAL ACTION CONTRACTOR SHALL NOTIFY THE PROPERTY OWNERS IN WRITING AT LEAST 48 HOURS PRIOR TO THE APPROXIMATE TIME OF ROAD RECONSTRUCTION WORK THAT WILL AFFECT THEIR DRIVE AND/OR DRIVES TO ALL COMMERCIAL, RESIDENTIAL AND HANDICAP PROPERTIES.

THE REMEDIAL ACTION CONTRACTOR CAN NOT DETOUR TRAFFIC ON MILL STREET AND CLOSE A LANE ON ELM STREET CONCURRENTLY.

SEE MILL STREET DETOUR PLAN FOR DETOUR AND SIGNING.

CALL DIG SAFE PRIOR TO ANY EXCAVATION AT 888-DIG-SAFE

WORK AREA

CITY: SYRACUSE DIV/GROUP: ENVCAD DB: L. POSENAUER G. STOWELL L. FORAKER K.SARTORI PIC: P. FARR PM: C. AVERILL TM: C. AVERILL LYR: ON=*; OFF=*REF*
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XREFS: 20985X10 20985X00 IMAGES: PROJECTNAME: —

20' 0 20' 40'
1"=20'

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Professional Engineer's Name		
LOWELL W. McBURNEY		
Professional Engineer's No.		
10767		
State	Date Signed	Project Mgr.
NH		CRA
Designed by	Drawn by	Checked by
MAM	.	.

DRAFT FOR EPA REVIEW

ARCADIS

ARCADIS U.S., INC.

GENERAL ELECTRIC COMPANY
FLETCHER'S PAINT WORKS AND STORAGE FACILITY SUPERFUND SITE
MILFORD, NEW HAMPSHIRE
FINAL (100%) DESIGN REPORT

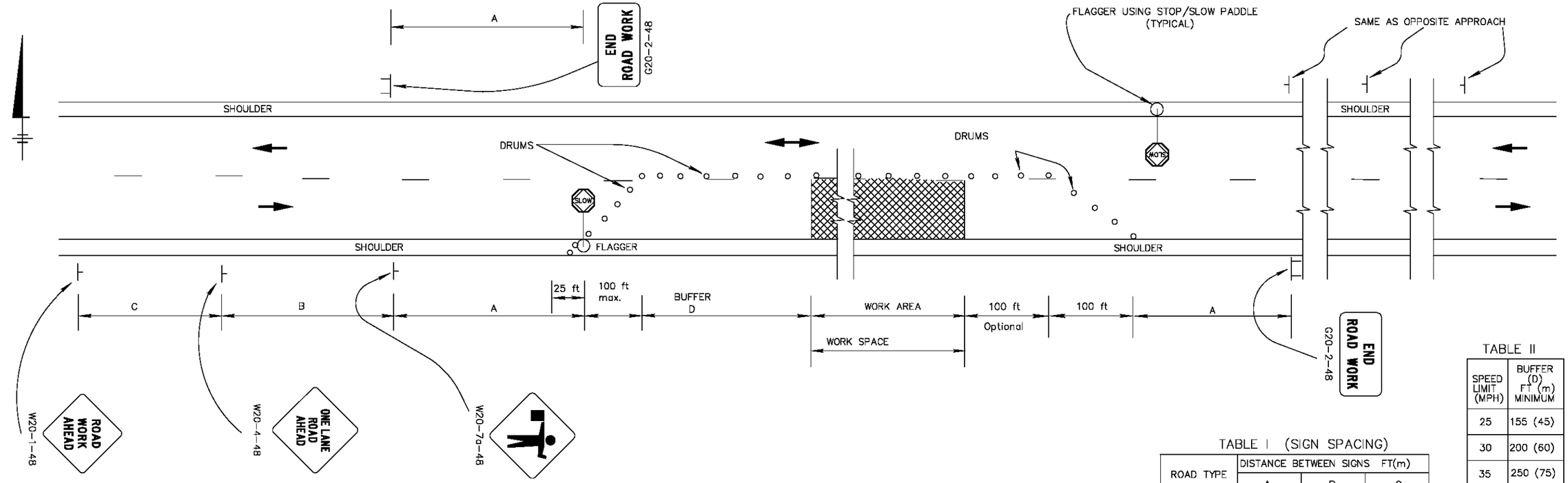
RECONSTRUCTION PHASING AND DRIVE ACCESS PLAN - MILL STREET AREA

ARCADIS Project No.
B0020985.0002.00006

Date
NOVEMBER 2012

ARCADIS OF NEW YORK
6723 TOWPATH ROAD
P.O. BOX 66
SYRACUSE, NEW YORK
TEL. 315.446.9120

T-2



LEGEND

DRUMS ○ ○ ○ ○ ○ ○

DIRECTION OF TRAVEL →

TABLE I (SIGN SPACING)

ROAD TYPE	DISTANCE BETWEEN SIGNS FT(m)		
	A	B	C
TWO-LANE ≤40 MPH	100 (30)	100 (30)	100 (30)
TWO-LANE 45-50 MPH	350 (100)	350 (100)	350 (100)
TWO-LANE 55 MPH	500 (150)	500 (150)	500 (150)

TABLE II

SPEED LIMIT (MPH)	BUFFER (D) FT (m) MINIMUM
25	155 (45)
30	200 (60)
35	250 (75)
40	305 (95)
45	360 (110)
50	425 (130)
55	495 (150)

GENERAL NOTES:

FLAGGERS

Flaggers, one for each direction, shall be used to control traffic continuously for as long as a one lane operation is in effect. The flaggers shall be able to communicate with each other at all times.

SIGN LOCATION AND SPACING

The minimum spacing between work zone signs is shown in Table I. Maximum spacing should not be greater than 1.5 times the distances shown in Table I.

Sign spacing should be adjusted to avoid conflict with existing signs. Minimum spacing to existing signs shall be 200 feet (60 m) for speeds of 45 mph or less and a minimum of 400 feet (120 m) for speeds of 50 mph or greater.

The location of the advance warning signs should be adjusted to provide for adequate sight distance for the existing vertical and horizontal roadway alignment. The distances shown are minimums.

ADJUSTMENTS FOR SIGHT DISTANCE

The location of the flagger station and the advance warning signs should be adjusted to provide for adequate sight distance for the existing vertical and horizontal roadway alignment.

BASIC SIGNING

ROAD WORK AHEAD (W20-1) signs shall be provided on entrance ramps or roadways entering the work limits.

END ROAD WORK (G20-2) signs are only required for lane closures of more than one day. It is intended that these signs be placed on the mainline, on all exit ramps, and on roadways exiting the work limits.

Overlapping of signing for adjacent projects should be avoided where the messages could be confusing. Any W20-1 or G20-2 sign which falls within the limits of another traffic control zone shall be omitted or covered during the period when both projects are active.

SIGNING DETAILS

The Advisory Speed plaque W13-1 shall be used when specified in the plan.

36 inch (900 mm) warning signs may be used when the approach speed limit is 40 mph or less.

DRUMS/CONES

Drum spacing shall be as follows:

a) Spacing along the closure shall be 50 feet (15 m) center to center.
b) Spacing along the approach taper shall be 10 feet (3m) center to center.

Cones may be substituted for drums as follows:

a) Cones used for daytime traffic control shall have a minimum height of 28 inches (0.7 m).
b) Cones used for nighttime traffic control shall have a minimum height of 42 inches (1.1 m).
c) Use of cones at night shall be prohibited along tapers.

Provisions shall be made to stabilize the cones and drums to prevent them from blowing over.

INTERSECTION/DRIVEWAY ACCESS

Within the length of closure, provision shall be made to control traffic entering from intersecting streets and major drives as necessary to prevent wrong-way movements and to keep vehicles off of new pavement not ready for traffic. The contractor shall:

a) Place across the closed lane, either 3 drums (cones) or barricades, and/or
b) Provide an additional flagger at every public street intersection and major driveway.

Existing stop signs shall be relocated as necessary to assure proper location for the traffic conditions.

The method of control shall be subject to the approval of the Design Engineer.

HOURS OF OPERATION

The remedial action contractor shall only excavate an area that can be backfilled in a single work day to enable two-way two lane traffic during peak hours and nonworking hours. On the approval of the Town of Milford the contractor may place temporary signals in lieu of flaggers during operations on Elm Street.

Two-way two lane traffic shall be maintained during AM and PM peak hours at all times unless approval in writing by the Town of Milford states differently.

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Professional Engineer's Name: LOWELL W. McBURNEY
Professional Engineer's No.: 10767
State: NH | Date Signed: | Project Mgr.: CRA
Designed by: MAM | Drawn by: . | Checked by: .

DRAFT FOR EPA REVIEW

ARCADIS
ARCADIS U.S., INC.

GENERAL ELECTRIC COMPANY
FLETCHER'S PAINT WORKS AND STORAGE FACILITY SUPERFUND SITE
MILFORD, NEW HAMPSHIRE
FINAL (100%) DESIGN REPORT

VEHICULAR MAINTENANCE OF TRAFFIC PLAN - ELM STREET AREA

ARCADIS Project No. B0020985.0002.00006
Date NOVEMBER 2012

ARCADIS OF NEW YORK
6723 TOWPATH ROAD
P.O. BOX 66
SYRACUSE, NEW YORK
TEL. 315.446.9120

T-3

CITY: SYRACUSE DIV/GROUP: ENVCAD DB: L. POSENAUER G. STOWELL L. FORAKER K.SARTORI PIC: P. FARR PM: C. AVERILL TM: C. AVERILL LYR: ON=*;OFF=REF*
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XREFS: 20985X00 IMAGES: PROJECTNAME:

(1) SEPARATOR TYPE WHEN USED BETWEEN THE WORK AREA AND A PEDESTRIAN WALKWAY:

SEPARATOR SELECTION TABLE

DISTANCE FROM SEPARATOR TO WORK ACTIVITY	WORK CHARACTERISTICS ③					
	< 2' (0.6 m) DROPOFF	2' (0.6 m – 5' (1.5 m) DROPOFF	> 5' (1.5 m) DROPOFF	DIRT/MUD SPLASHED	EQUIPMENT WHICH MOVES OR HAS EXPOSED MOVING PARTS	OPERATION WHICH THROWS STONE/ETC.
< 5' (1.5 m)	A–H	E–H	F–G	G	G–H	G ①
5' (1.5 m) – 10' (3.0 m)	A–H	E–H	E–H	G	E–H	G ①
> 10' (3.0 m) – 30' (9.0 m)	A–H	C–H	E–H	N/A	D–H	G ①
> 30' (9.0 m)	N/A	C–H	E–H	N/A	D–H	G ①

A. CONES ②
B. DRUMS ②
C. MARKER TAPE ON DRUMS OR CONES ②
D. WOOD RAILING
E. SNOW FENCE, WOOD OR ORANGE PLASTIC CONSTRUCTION FENCE
F. CHAIN LINK FENCE, TYPE CLT
G. PLYWOOD WALL
H. PORTABLE CONCRETE BARRIER

① Wall shall be of sufficient height to screen pedestrians and passing cars. It should be provided when the walkway is within range of any thrown projectiles.

② These devices are for use during daylight hours only.

③ These requirements shall not apply to paving, grinding or other similar operations.

(2) SEPARATOR REQUIREMENTS: (SEE TABLE ABOVE)

A. Cones to delineate pedestrian walkways shall be a minimum of 28" (0.7 m) high and spaced at 5' (1.5 m) intervals.

B. Drums to delineate pedestrian walkways shall be spaced at 5' (1.5 m) intervals.

C. Marker tape shall be bright fluorescent orange approximately 3" (75 mm) wide. Attachment to drums/cones shall be strong and waterproof.

D. Wood railing shall be a minimum of a 2"x4" (51x102 mm) rail at 32" (810 mm) above ground. It shall be secured to 2"x4" (51x102 mm) posts at not more than 6' (1.8 m) spacing with secure attachment hardware. It shall be installed and braced to be essentially rigid and able to support the following loads:

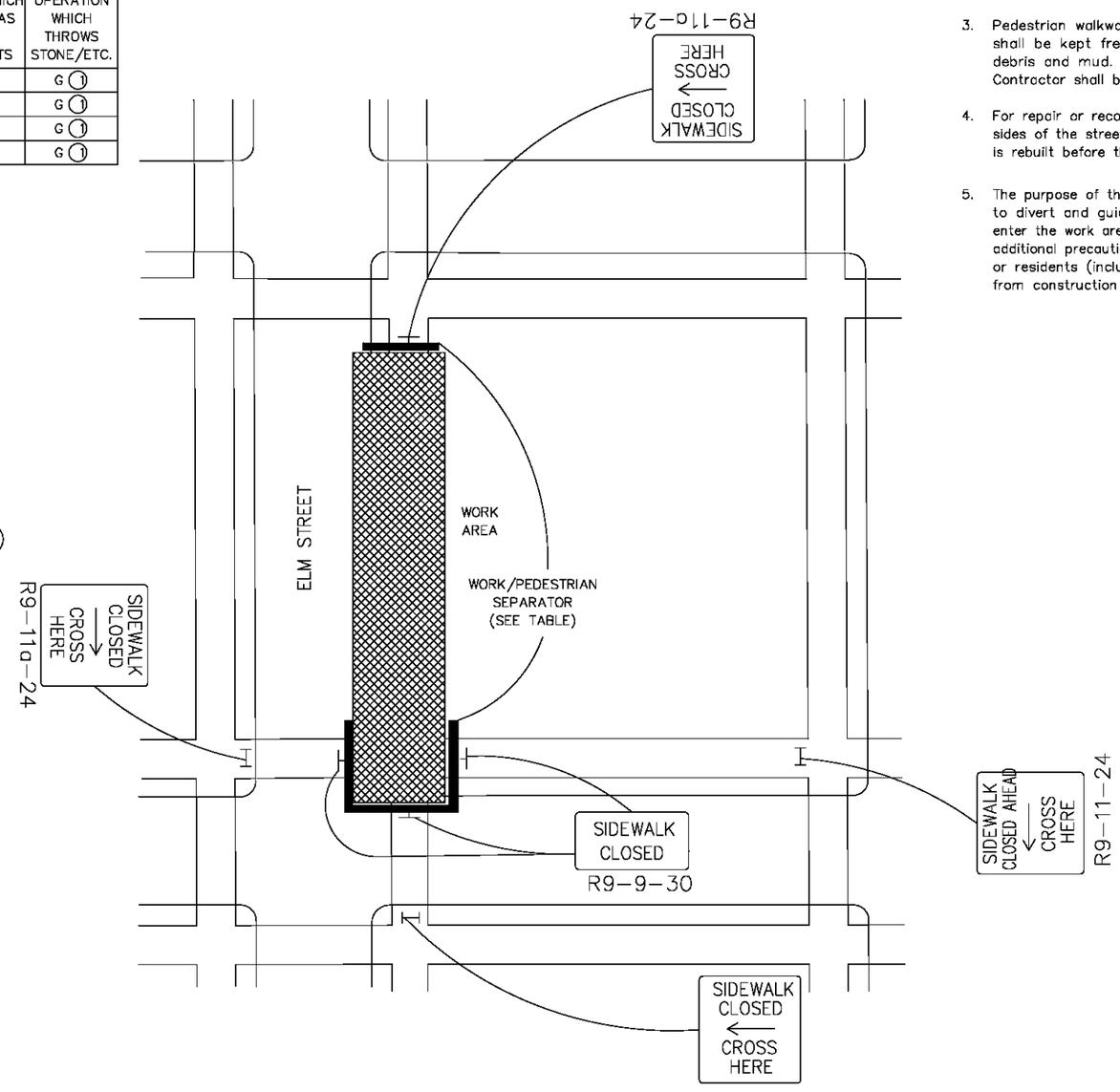
1) A horizontal transverse load of 100 pounds (45 kg) at each post top.
2) A vertical load of 250 pounds (113 kg) at midpoint between each post.

E. Wood snow fence shall be nominally 42" (1060 mm) high, securely supported by wood or steel posts at 6' (1.8 m) maximum spacing. Plastic/nylon construction fence shall be bright orange. It shall be securely fastened to wood or metal posts at not more than 6' (1.8 m) spacing. It shall be nominally 42" (1060 mm) high and the top edge shall not sag below 30" (760 mm) [12" (300 mm) sag]. Either of the fence sections with extensive broken slats or holes greater than 12"x12" (300x300 mm) shall be repaired or replaced.

F. Chain link fence shall be approved by the design engineer.

G. Plywood walls shall be a minimum of ¾" (16 mm) exterior plywood, supported by 2"x4" (51x102 mm) or heavier framing securely anchored and buttressed to resist wind load and/or persons. They shall be designed for a min. wind loading of 30 pounds per sq. foot (138 KPA) (or larger if local codes require). Height of the work/pedestrian separators shall not be less than 7' (2.1 m) above the walkway.

H. 32" (810 mm) Portable Concrete Barrier.



GENERAL NOTES

1. Traffic controls for pedestrians only are shown. Vehicular traffic control shall also be provided as required.

2. All signs and barricades shall be placed so that they do not cause a hazard for pedestrians. All signs, not on barricades or separators, near or over active sidewalks shall have a minimum 7' (2.1 m) vertical clearance. Signs mounted on barricades or separators shall have a minimum 1' (0.3 m) clearance above sidewalk.

3. Pedestrian walkways constructed by the Remedial Action Contractor shall be kept free of any obstructions or hazards including holes, debris and mud. Other walkways damaged or dirtied by the Contractor shall be immediately repaired or cleaned.

4. For repair or reconstruction work involving sidewalks on both sides of the street, the work shall be staged so that one side is rebuilt before the other is disrupted.

5. The purpose of the traffic control devices provided hereon is to divert and guide pedestrians whose path would otherwise enter the work area. The Remedial Action Contractor must take additional precautions as appropriate to protect other pedestrians or residents (including children) from exposure to hazards resulting from construction operations.

CITY: SYRACUSE DIV/GROUP: ENVCAD DB: L. POSENAUER G. STOWELL L. FORAKER K.SARTORI PIC: P. FARR PM: C. AVERILL TM: C. AVERILL LYR: ON=*; OFF=*REF*
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Professional Engineer's Name: LOWELL W. McBURNEY
Professional Engineer's No.: 10767

State	Date Signed	Project Mgr.
NH		CRA
Designed by MAM	Drawn by .	Checked by .

DRAFT FOR EPA REVIEW

ARCADIS
ARCADIS U.S., INC.

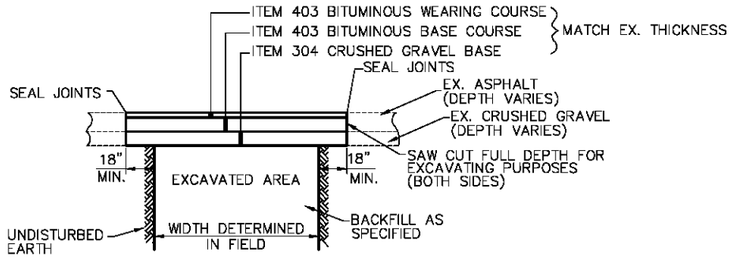
GENERAL ELECTRIC COMPANY
FLETCHER'S PAINT WORKS AND STORAGE FACILITY SUPERFUND SITE
MILFORD, NEW HAMPSHIRE
FINAL (100%) DESIGN REPORT

PEDESTRIAN MAINTENANCE OF TRAFFIC PLAN - ELM STREET AREA

ARCADIS Project No. B0020986.0002.00006
Date NOVEMBER 2012

ARCADIS OF NEW YORK
6723 TOWPATH ROAD
P.O. BOX 66
SYRACUSE, NEW YORK
TEL. 315.446.9120

T-4



PAVEMENT REPAIR DETAIL

SCALE: NONE

IN AREAS WHERE THE PAVEMENT IS TO BE EXCAVATED, IT SHALL BE NEATLY AND UNIFORMLY SAW CUT WITH SQUARE EDGES BY MACHINE AT EACH SIDE OF THE PAVEMENT REPLACEMENT OPENING. EVERY PRECAUTION SHALL BE USED TO PREVENT UNDERMINING OF THE REMAINING PAVEMENT UTILIZING SHEETING AS REQUIRED TO PREVENT CAVE–IN AND TO PROTECT THE REMAINING PAVEMENT. ANY UNDERMINED AREAS INADVERTENTLY DEVELOPED SHALL HAVE THE PROJECTING PAVEMENT CUT SQUARE AND REMOVED. EXCAVATION AND HANDLING OF MATERIAL SHALL BE PERFORMED IN A MANNER AS WILL MINIMIZE THE POSSIBILITY OF SUCH CAVE–INS. ANY BLASTING REQUIRED SIMILARLY SHALL BE CAUTIOUSLY PERFORMED TO MINIMUM DISTURBANCE BEYOND THE PAVEMENT REPLACEMENT LIMITS.

ALL OTHER EXCAVATION SHALL BE PERFORMED IN A MANNER AS WILL PRODUCE THE MINIMUM POSSIBLE WIDTH OF DISTURBED AREA. SHEETING SHALL BE USED AS REQUIRED TO PREVENT CAVE–INS.

CRUSHED GRAVEL BASE (AS DIRECTED IN NEW HAMPSHIRE STANDARD SPECIFICATIONS) SHALL BE PLACED ON PROPERLY COMPACTED SUBGRADE IN 6 INCH COMPACTED LAYERS AND SHALL BE EQUAL TO EXISTING GRAVEL COURSE DEPTH OR A MINIMUM OF 18 INCHES WHICHEVER IS GREATER. EACH LAYER SHALL BE COMPACTED TO A MINIMUM OF 95% OF MAXIMUM DRY DENSITY AS DETERMINED BY THE PROCTOR MODIFIED METHOD.

BITUMINOUS CONCRETE PAVING MIXTURE SHALL BE PLACED ONLY WHEN THE PROPER DENSITY CAN BE OBTAINED. PRECAUTIONS SHALL BE TAKEN AT ALL TIMES TO COMPACT THE MIXTURE BEFORE IT COOLS TOO MUCH TO OBTAIN THE REQUIRED DENSITY. THE MIXTURE SHALL NOT BE PLACED ON ANY WET SURFACE OR WHEN WEATHER CONDITIONS PREVENT ITS PROPER HANDLING OR FINISHING. BITUMINOUS CONCRETE WEARING COURSE MIXTURE SHALL NOT BE PLACED WHEN THE AIR TEMPERATURE IS BELOW 45 DEGREES F. BITUMINOUS CONCRETE BINDER COURSE MIXTURE SHALL NOT BE PLACED WHEN AIR TEMPERATURE IS 32 DEGREES F.

EQUIPMENT SHALL CONSIST OF A SELF–POWERED PAVER THAT IS CAPABLE TO SPREADING THE MIXTURE TO THE THICKNESS AND WIDTH SPECIFIED, TRUE TO THE LINE, GRADE AND CROWN AS WAS EXISTING, OR OTHERWISE APPROVED BY THE DESIGN ENGINEER; SUFFICIENT SMOOTH METAL BEDDED HAUL TRUCKS WITH COVES TO INSURE ORDERLY AND CONTINUOUS PAVING OPERATIONS; ONE OR MORE STEEL WHEELED ROLLER HAVING A WEIGHT OF NOT LESS THAN 8 TONS AND NOT MORE THAN 12 TONS; A POWER BROOM AND HAND TOOLS NECESSARY TO COMPLETE THE PROJECT. OTHER EQUIPMENT MAY BE USED IN ADDITION TO, OR IN LIEU OF, THE SPECIFIED EQUIPMENT WHEN APPROVED BY THE DIRECTOR OF PUBLIC WORKS.

ALL EDGES OF THE ADJACENT PAVEMENTS SHALL BE TRIMMED TO NEAT STRAIGHT LINES AND CLEANED TO PROVIDE A FIRM, REGULAR AND CLEAN SURFACE TO BOND THE NEW PAVEMENT PRIOR TO THE PLACEMENT OF EACH LAYER OF PAVEMENT. THE PREVIOUS PAVEMENT COURSE SHALL BE THOROUGHLY CLEANED PRIOR TO PLACEMENT OF THE FINAL WEARING SURFACE COURSE AND THE CLEANED EDGES OF THE ADJACENT PAVEMENT SHALL BE COATED WITH BITUMINOUS MATERIAL TO IMPROVE THE BOND BETWEEN THE OLD AND NEW PAVEMENT. CARE SHALL BE EXERCISED NOT TO ALTER ORIGINAL STREET DRAINAGE.

ALL EDGES OF PAVEMENT PATCHES AND ALL CONSTRUCTION OVERLAY JOINTS SHALL RECEIVE A COAT OF EMULSIFIED ASPHALT WITH SAND SPREAD ON TOP.

PAVING ON FROZEN GROUND IS PROHIBITED.

ALL ROADWAYS MUST HAVE A COMPLETE COAT OF BITUMINOUS EMULSION APPLIED IMMEDIATELY BEFORE PAVING THE WEARING COURSE.

COLD–PLANED JOINTS MUST BE PROVIDED AT ALL OVERLAY LIMITS. THE EXISTING PAVEMENT MUST BE REMOVED TO MAXIMUM DEPTH (1) ONE INCH TAPERING TO (0) ZERO INCHES IN (10) TEN FEET, THE FULL WIDTH OF THE OVERLAY. THE EQUIPMENT USED SHALL BE A POWER–OPERATED ROTARY PLANING OR MILLING MACHINE CAPABLE OF UNIFORMLY REMOVING THE EXISTING BITUMINOUS SURFACES.

RE–PAINT ALL STRIPING WITHIN THE LIMITS OF THE OVERLAY. MATCH EXISTING STRIPING LOCATION AT OVERLAY LIMITS. ALL STRIPING LAYOUTS SHALL BE APPROVED BY THE DESIGN ENGINEER PRIOR TO PERFORMING THE WORK. PROVIDE TEMPORARY MARKINGS (REFLECTORIZED PLASTIC MARKINGS, R.P.M'S) AS DIRECTED BY THE DIRECTOR OF PUBLIC WORKS IF STRIPING CANNOT BE PERFORMED IMMEDIATELY AFTER OVERLAY WORK IS COMPLETED.

3" TEMPORARY BITUMINOUS PAVEMENT:

GENERAL:
THE REMEDIAL ACTION REMEDIAL ACTION CONTRACTOR SHALL FURNISH ALL LABOR AND MATERIALS TO PLACE TEMPORARY PAVING OVER THE BACKFILL.

THE REMEDIAL ACTION REMEDIAL ACTION CONTRACTOR SHALL MAINTAIN THE TEMPORARY BITUMINOUS PAVING IN AN ACCEPTABLE CONDITION AS DETERMINED BY THE DIRECTOR OF PUBLIC WORKS, UNTIL PERMANENT BITUMINOUS PAVING IS INSTALLED.

THE TEMPORARY PAVING SHALL BE PLACED AFTER BACKFILLING AND COMPACTING IN ACCORDANCE WITH THE TOWN OF MILFORD STANDARD SPECIFICATION FOR BITUMINOUS CONCRETE PAVING SECTION WITHIN 5 DAYS, OR AS CLOSE TO THIS PERIOD AS IS CONVENIENT AND ACCEPTABLE TO THE DIRECTOR OF PUBLIC WORKS AFTER BACKFILLING.

MATERIALS:
TEMPORARY BITUMINOUS PAVEMENT SHALL CONSIST OF PLANT MIX BITUMINOUS PAVEMENT CONFORMING TO THE NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION (NHDOT) STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION (LATEST EDITION) – SECTION 401.

CRUSHED GRAVEL BASE SHALL CONFORM TO NHDOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION – SECTION 304. BANK RUN GRAVEL SHALL CONFORM TO NHDOT STANDARD SPECIFICATION – SECTION 304.

EXECUTION:
REMOVE SUFFICIENT BACKFILL MATERIAL TO ALLOW PLACING OF A MINIMUM OF 12 INCHES OF BANK RUN GRAVEL BASE AND 6 INCH CRUSHED GRAVEL THOROUGHLY COMPACTED, AND A 3 INCH THICKNESS OF BITUMINOUS CONCRETE TEMPORARY PAVING.

THOROUGHLY CLEAN SURFACES OF EXISTING PAVING WHICH WILL BE BONDED TO TEMPORARY PATCH. THE EDGE OF THE EXISTING PAVEMENT SHALL BE SAW–CUT TO A STRAIGHT BONDING EDGE, ONE FOOT BEYOND THE EDGE OF DISTURBED PAVEMENT PRIOR TO PLACING THE 3–INCH TEMPORARY BITUMINOUS PAVEMENT.

BITUMINOUS CONCRETE TEMPORARY PAVING TO BE APPLIED IN ONE TWO INCH BASE COURSE AND ONE INCH WEARING COURSE. THE WEARING OF PAVING WILL BE AT GRADE WITH THE EXISTING PAVING.

3" PERMANENT BITUMINOUS PAVEMENT:

GENERAL:
THE REMEDIAL ACTION REMEDIAL ACTION CONTRACTOR SHALL FURNISH ALL LABOR AND MATERIALS TO INSTALL PERMANENT BITUMINOUS PAVING IN THE EXCAVTED AREA. THE PAVING IS TO BE PLACED AFTER AT LEAST 30 DAYS HAS ELAPSED SINCE THE PLACING OF TEMPORARY PAVING OR SUFFICIENT TIME HAS ELAPSED FOR REQUIRED COMPACTION TO OCCUR, AS DETERMINED BY THE DESIGN ENGINEER. NO FINAL WEARING COURSE SHALL BE APPLIED UNTIL THE PERMANENT BINDER COURSE HAS EXPERIENCED ONE WINTER SEASON OF USE.

MATERIALS:
TEMPORARY BITUMINOUS PAVEMENT SHALL CONSIST OF PLANT MIX BITUMINOUS PAVEMENT CONFORMING TO THE NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION (NHDOT) STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION (LATEST EDITION) – SECTION 401.

EXECUTION:
SAW EDGES OF EXISTING TEMPORARY PAVING TO PROVIDE A ONE–FOOT MINIMUM OVERLAP OF THE FINAL PATCH ON UNDISTURBED MATERIAL. REMOVE TEMPORARY PAVING AND SAW CUT EXISTING PAVING. RESET MANHOLE FRAMES AND COVERS AS REQUIRED.
RESET TEMPORARY PAVING WITH AT LEAST 3 INCHES OF HOT BITUMINOUS CONCRETE, COMPRISED OF TWO–INCH BASE COURSE AND ONE INCH WEARING COURSE.

ALL SURFACES ARE TO BE THOROUGHLY CLEANED TO ENSURE GOOD ADHESION BETWEEN EXISTING SURFACES AND NEW PERMANENT PAVEMENT REPLACEMENT PAVING. ROLLER COMPACT FINAL WEARING COURSE TO MEET EXISTING PAVEMENT SURFACES EXACTLY. ALL EDGES OF PAVEMENT PATCHES SHALL RECEIVE A COAT OF EMULSIFIED ASPHALT WITH SAND SPREAD ON TOP.

1" FULL WIDTH PERMANENT BITUMINOUS PAVEMENT – ALTERNATE

GENERAL:

THE REMEDIAL ACTION CONTRACTOR SHALL FURNISH ALL LABOR AND MATERIAL TO INSTALL PERMANENT BITUMINOUS PAVING OVER THE FULL WIDTH OF THE ROADWAY, CURB–TO–CURB OR SHOULDER–TO–SHOULDER.

THE PAVING IS TO BE PLACED AFTER AT LEAST 30 DAYS HAVE ELAPSED SINCE THE PLACING OF THE 3–INCH TEMPORARY PAVING (TO REMAIN IN PLACE) ALTERNATIVE OR SUFFICIENT TIME HAS ELAPSED FOR REQUIRED COMPACTION TO OCCUR AS DETERMINED BY THE DESIGN ENGINEER.

MATERIALS:

THE BITUMINOUS PAVING FOR BASE COURSE SHALL BE THE 3–INCH TEMPORARY BITUMINOUS PAVING (TO REMAIN IN PLACE) ALTERNATIVE AS PREVIOUSLY PLACED, AND THE WEARING COURSE, PER NHDOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION – SECTION 400.

EXECUTION:

INSPECT TEMPORARILY PAVED AREAS AND REPLACE LOOSE OR BROKEN PAVING WITH HOT BITUMINOUS CONCRETE PATCH AS REQUIRED. PARTICULAR ATTENTION SHOULD BE PAID TO THE EDGE JOINT FOR UNEVENNESS AND LOOSE PAVING.

BRING TO GRADE LOW OR SETTLED AREAS OF THE TEMPORARY PAVING USING HOT LEVELING BITUMINOUS MIX.

RESET NEW MANHOLE FRAMES AND COVERS AS REQUIRED AND ADJUST EXISTING CASTINGS AS NECESSARY.

THOROUGHLY CLEAN ENTIRE PAVED SURFACES MAKING IT SUITABLE FOR FINAL OVERLAY COURSE.

THE REMEDIAL ACTION CONTRACTOR MUST PROVIDE COLD–PLANED JOINTS AT ALL OVERLAY LIMITS AS DIRECTED BY THE DESIGN ENGINEER. THE EXISTING PAVEMENT MUST BE REMOVED TO A MAXIMUM DEPTH OF ONE (1) INCH TAPERING TO ZERO (0) INCHES IN TEN (10) FEET, FOR THE FULL WIDTH OF THE OVERLAY. THE EQUIPMENT USED SHALL BE A POWER–OPERATED ROTARY PLANING OR MILLING MACHINE CAPABLE OF UNIFORMLY REMOVING THE EXISTING BITUMINOUS SURFACES.

APPLY FULL WIDTH (CURB–TO–CURB OR SHOULDER–TO–SHOULDER) PAVING COURSE CONSISTING ON ONE INCH OF TYPE E HOT BITUMINOUS WEARING COURSE.

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2007 SPECIFICATIONS:

THE NHDOT STANDARD SPECIFICATIONS FOR ROADWAYS AND BRIDGE CONSTRUCTION AND THE TOWN OF MILFORD INFRASTRUCTURE DESIGN, CONSTRUCTION & ADMINISTRATION STANDARDS SHALL GOVERN THIS ROADWAY IMPROVEMENT.

CITY: SYRACUSE DIV/GROUP: ENVCAD DB: L. POSENAUER G. STOWELL L. FORAKER K.SARTORI PIC: P. FARR PM: C. AVERILL TM: C. AVERILL LYR: ON=*; OFF=REF*
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Professional Engineer's Name: LOWELL W. McBURNEY
Professional Engineer's No.: 10767
State: NH | Date Signed: | Project Mgr.: CRA
Designed by: MAM | Drawn by: . | Checked by: .

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ARCADIS U.S., INC.

GENERAL ELECTRIC COMPANY
FLETCHER'S PAINT WORKS AND STORAGE FACILITY SUPERFUND SITE
MILFORD, NEW HAMPSHIRE
FINAL (100%) DESIGN REPORT

PAVEMENT REPAIR DETAIL AND NOTES - ELM STREET AREA

ARCADIS Project No. B0020985.0002.00006
Date NOVEMBER 2012

ARCADIS OF NEW YORK
6723 TOWPATH ROAD
P.O. BOX 66
SYRACUSE, NEW YORK
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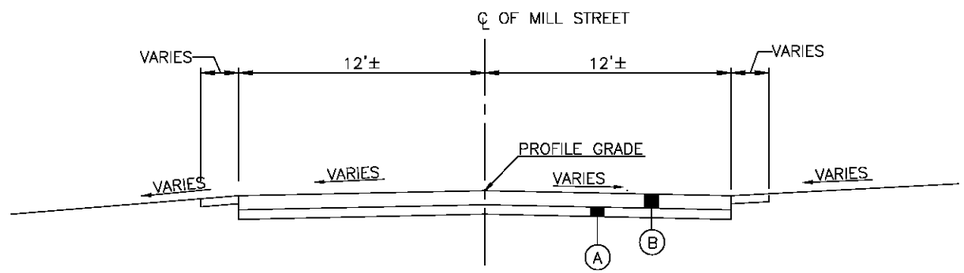
TYPICAL SECTIONS

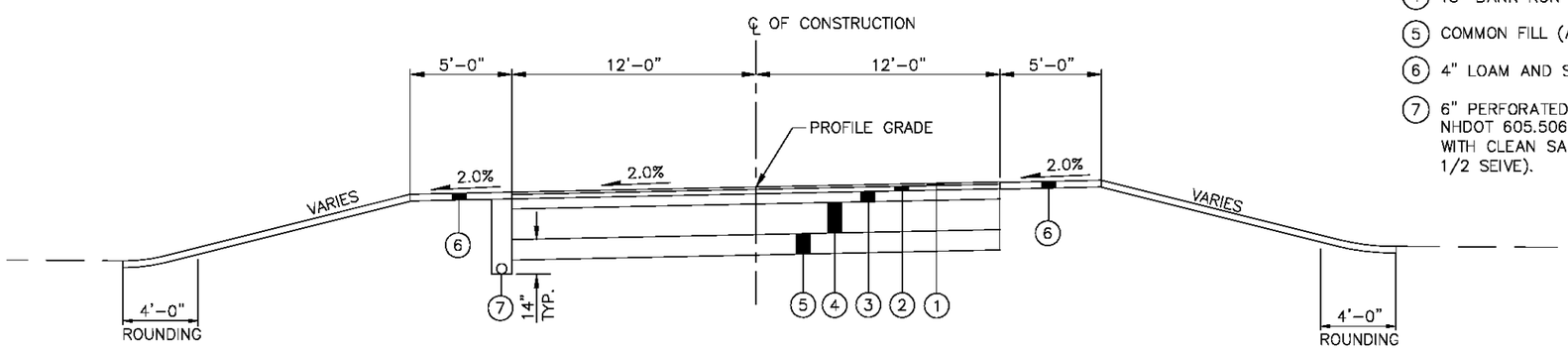


EXISTING SECTION – MILL STREET.

LEGEND:

(A) EXISTING 6"± AGGREGATE BASE (ASSUMED)

(B) EXISTING 4"–6"± ASPHALT CONCRETE (ASSUMED)



NORMAL SECTION – MILL STREET

STA. 5+59.09 TO STA. 9+50.0 = 390.91 L.F.

(NOT TO SCALE)

LEGEND:

(1) 1 1/2" WEARING COURSE, (NHDOT 403.11)

(2) 2 1/2' BASE COURSE (NHDOT 403.11)

(3) 6" CRUSHED GRAVEL (NHDOT 304.3)

(4) 18" BANK RUN COURSE, (NHDOT 304.2, PLACED IN 6" LIFTS)

(5) COMMON FILL (AS REQUIRED, MAXIMUM 1'–0" LIFTS)

(6) 4" LOAM AND SEED (NHDOT 641 & 644.15)

(7) 6" PERFORATED CORRUGATED POLYETHLY PIPE UNDERDRAIN, PER NHDOT 605.506 WITH FILTER FABRIC BACKFILLED WITH CLEAN SAND (NHDOT 304.1 PLUS 100% PASSING 1/2 SEIVE).

2007 SPECIFICATIONS:

THE NHDOT STANDARD SPECIFICATIONS FOR ROADWAYS AND BRIDGE CONSTRUCTION AND THE TOWN OF MILFORD INFRASTRUCTURE DESIGN, CONSTRUCTION & ADMINISTRATION STANDARDS SHALL GOVERN THIS ROADWAY IMPROVEMENT.

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Professional Engineer's Name: LOWELL W. McBURNEY
Professional Engineer's No.: 10767

State	Date Signed	Project Mgr.
NH		CRA
Designed by	Drawn by	Checked by
MAM	.	.

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TYPICAL SECTIONS - MILL STREET AREA

ARCADIS Project No. B0020985.0002.00006

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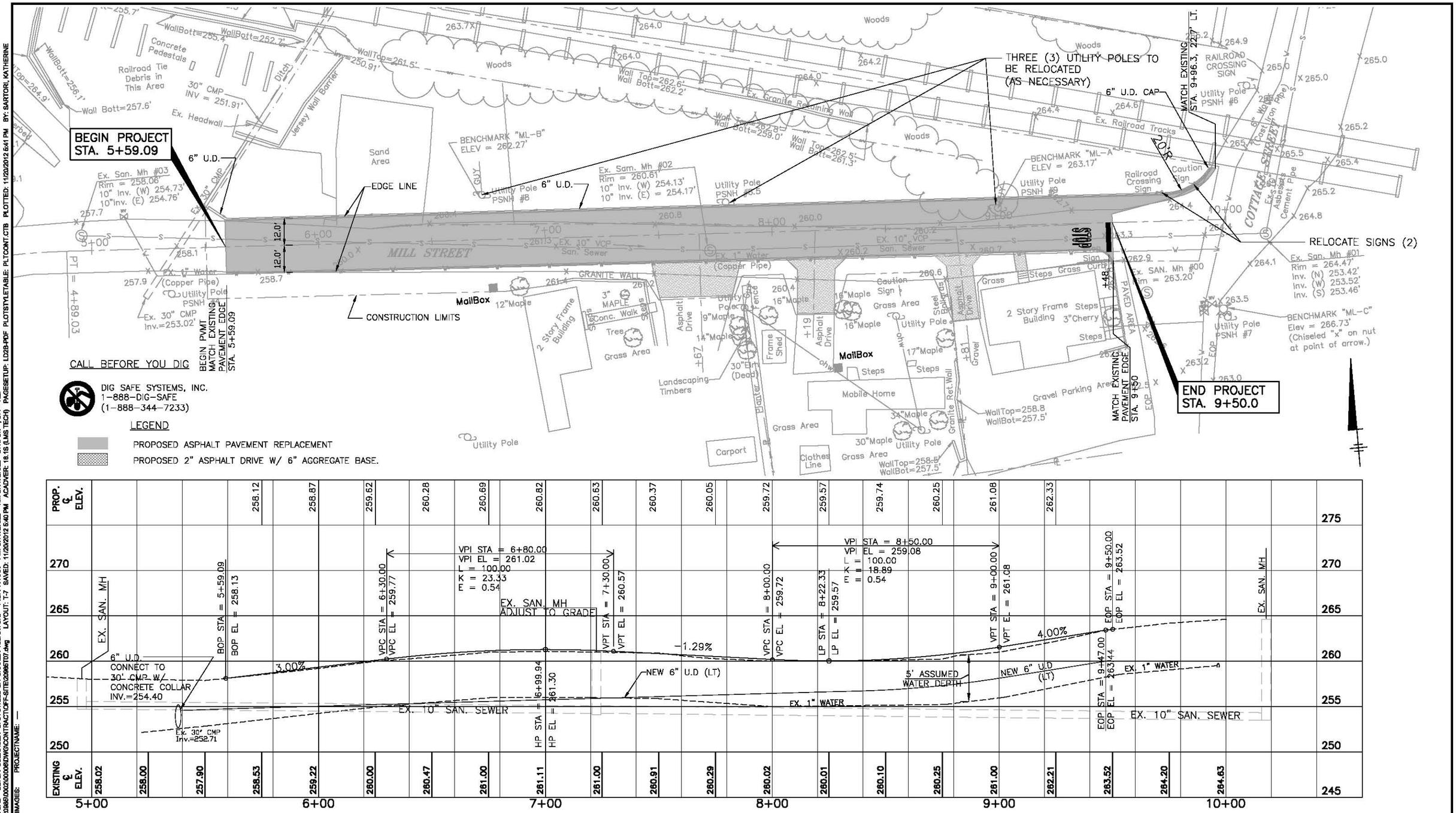

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Professional Engineer's Name: LOWELL W. McBURNEY
Professional Engineer's No.: 10767
State: NH | Date Signed: | Project Mgr.: CRA
Designed by: MAM | Drawn by: . | Checked by: .

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PLAN AND PROFILE STA 5+59.09 TO STA 9+50.00 - MILL STREET AREA

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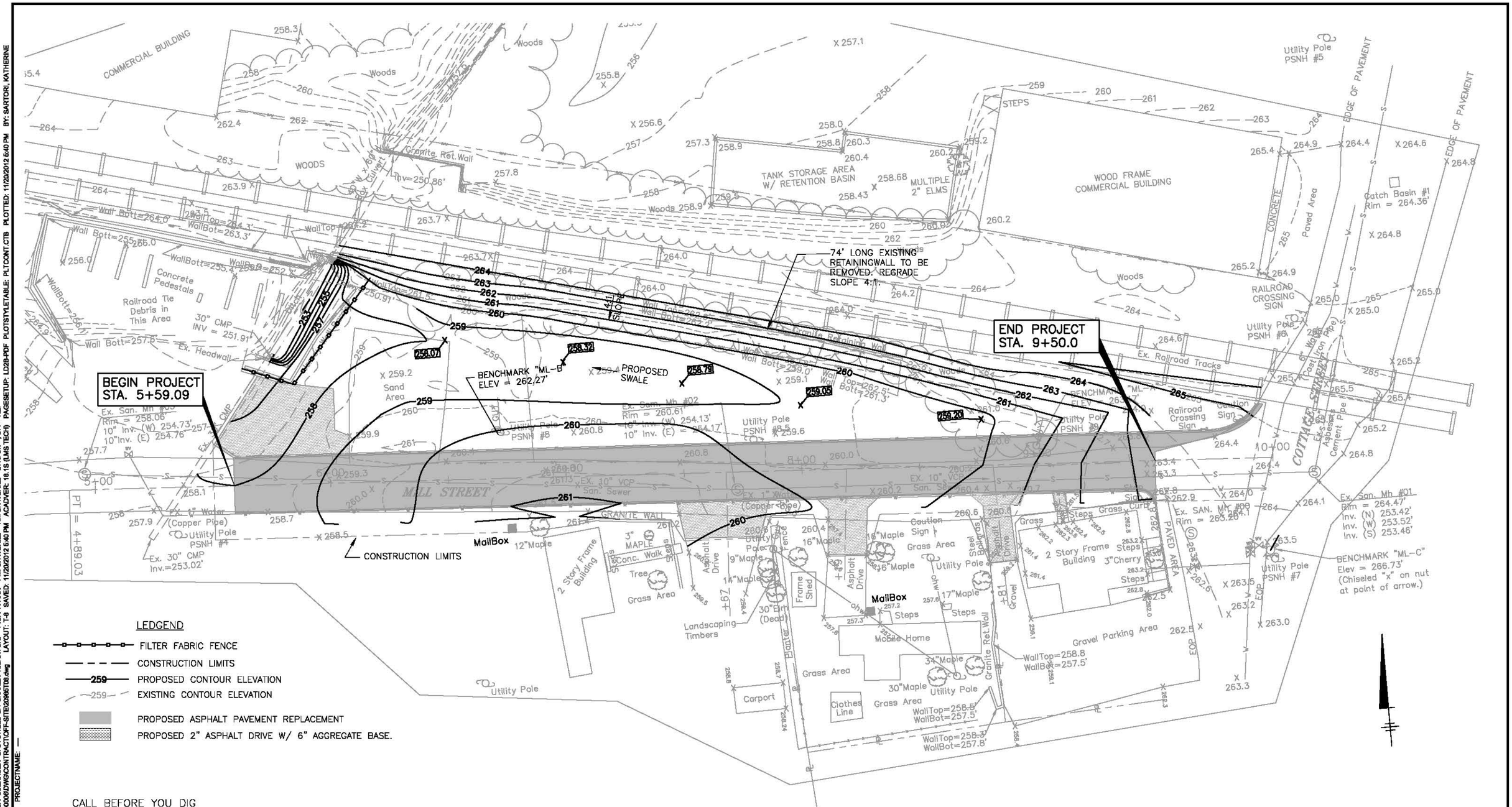

LEDGEND

- FILTER FABRIC FENCE
- CONSTRUCTION LIMITS
- 259 PROPOSED CONTOUR ELEVATION
- 259 EXISTING CONTOUR ELEVATION
- PROPOSED ASPHALT PAVEMENT REPLACEMENT
- PROPOSED 2" ASPHALT DRIVE W/ 6" AGGREGATE BASE.

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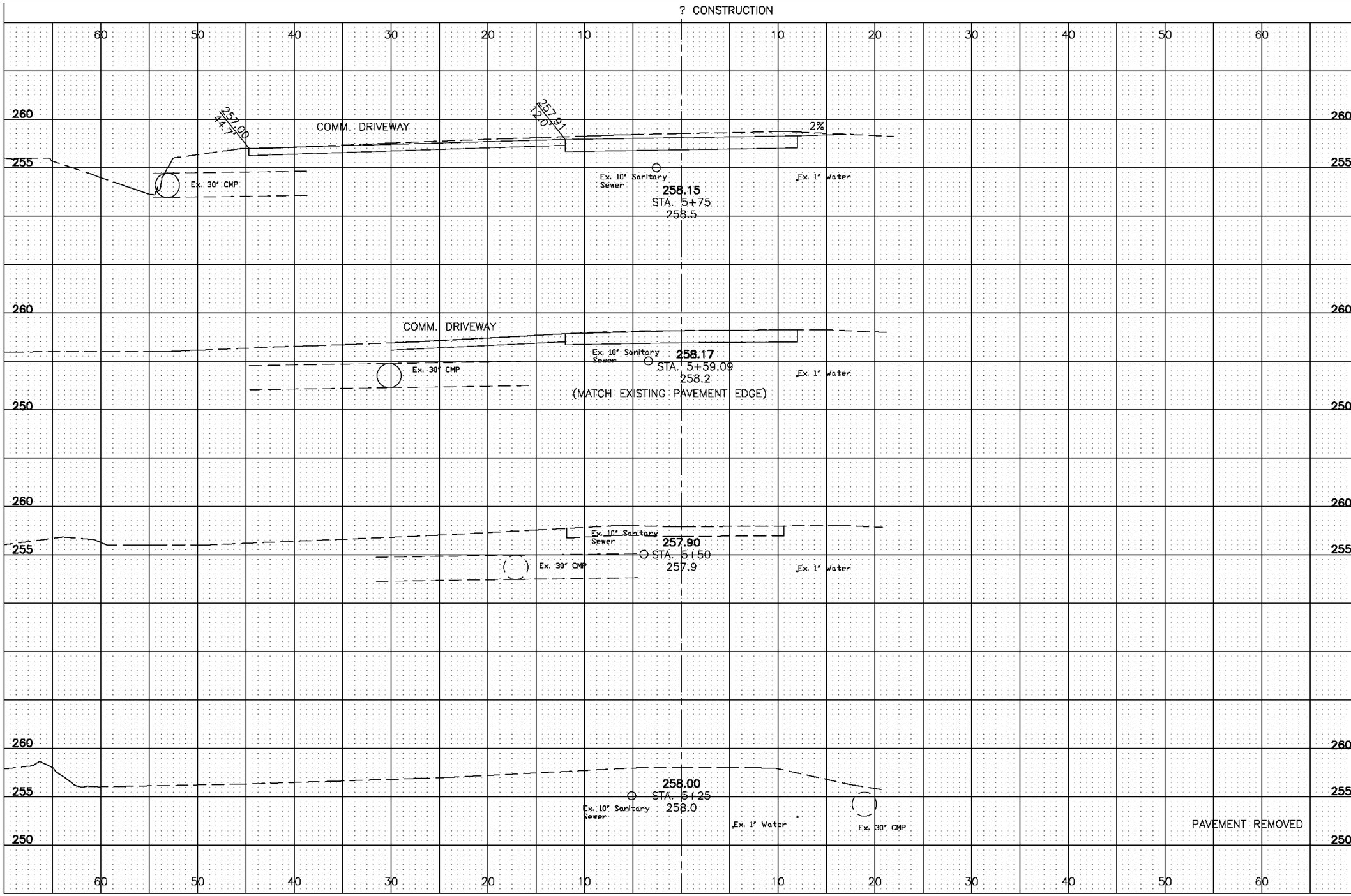

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	SQ. YD.	SQ. YD.	CU. YD.	CU. YD.
	31	0		
(DRIVE	AREA)		9 (34)	0 (0)
	0	0	0	0
	0	0		
SUBTOTAL			43	0

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

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CROSS SECTION STA 5+25 TO STA 5+75 - MILL STREET AREA

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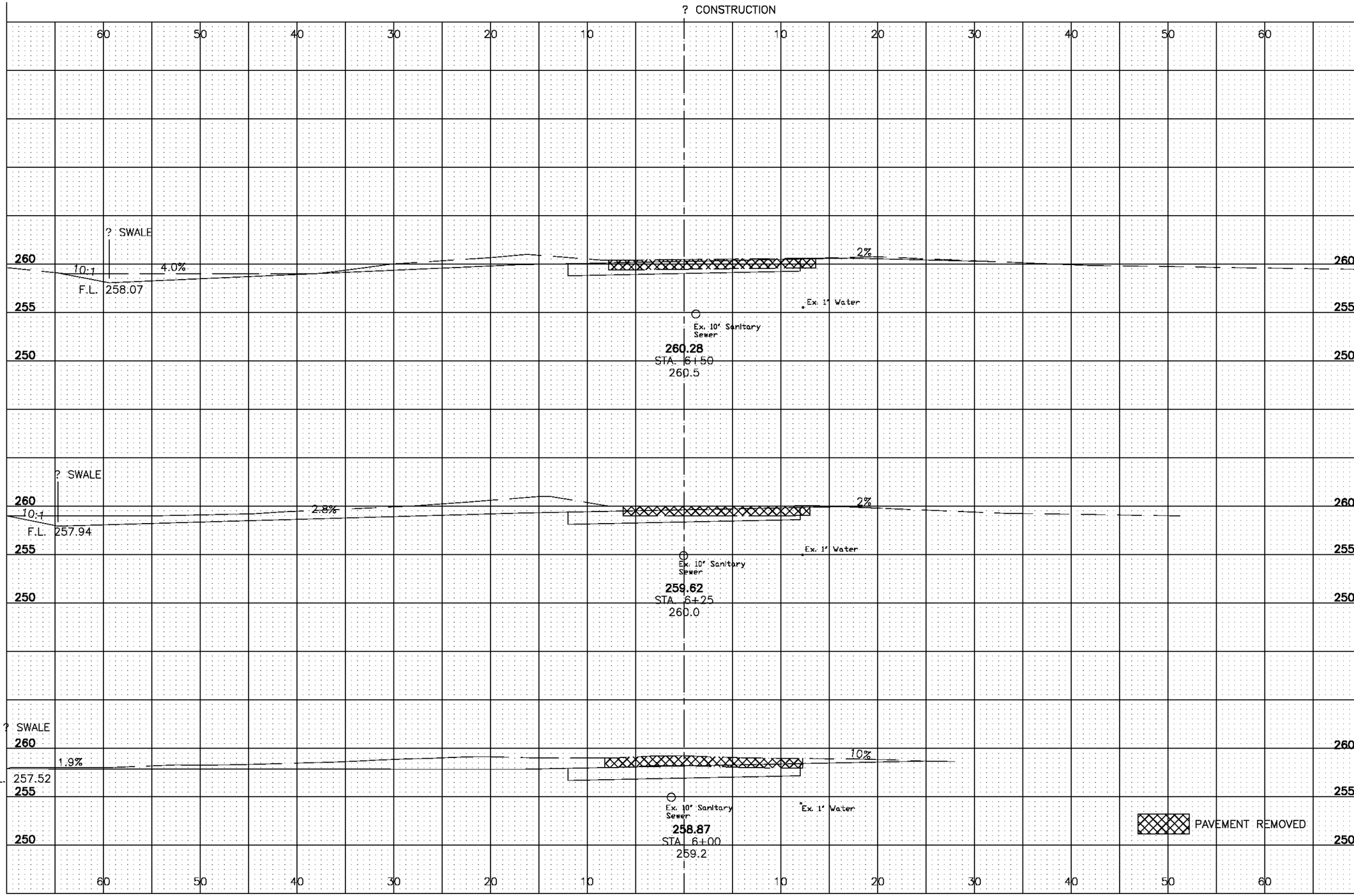

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	SQ. YD.	SQ. YD.	CU. YD.	CU. YD.
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			59	2
	63	5		
			42	2
	27	0		
			27	0
SUBTOTAL			128	4

1"=5' (5' 0 5' 10')

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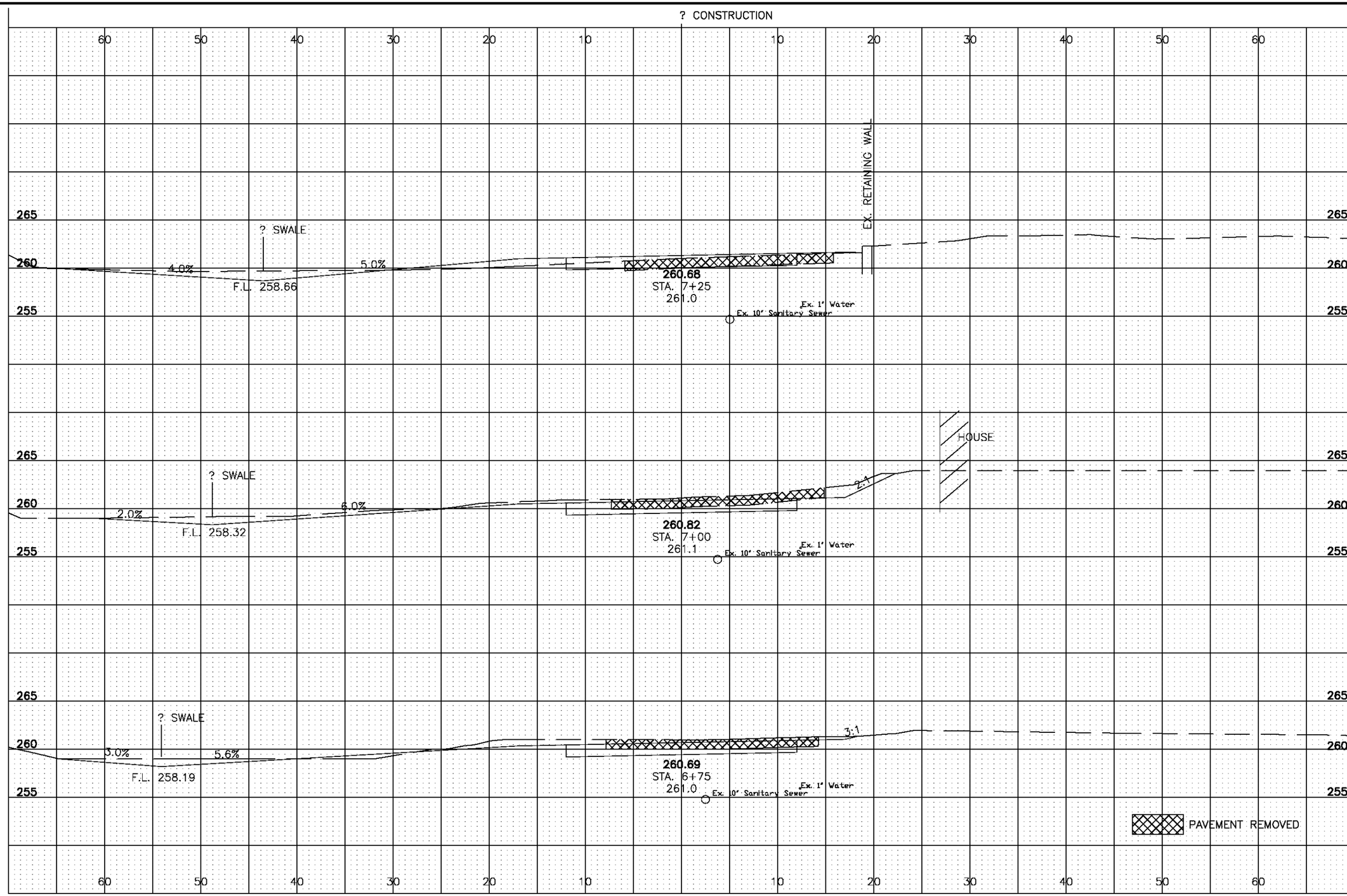

	END AREA		VOLUME	
	CUT	FILL	CUT	FILL
	SQ. YD.	SQ. YD.	CU. YD.	CU. YD.
	38	11		
			39	9
	46	8		
			38	4
	37	0		
			46	0
SUBTOTAL			123	13

CITY: SYRACUSE DIV/GROUP: ENVCAD DB: L. POSENAUER G. STOWELL L. FORAKER K.SARTORI PIC: P. FARR PM: C. AVERILL TM: C. AVERILL LYR: ON=*; OFF=*REF*
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XREFS: 20986X00 IMAGES: PROJECTNAME: —

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

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No.	Date	Revisions	By	Ckd

THIS DRAWING IS THE PROPERTY OF THE ARCADIS ENTITY IDENTIFIED IN THE TITLE BLOCK AND MAY NOT BE RELIED OR ALTERED IN WHOLE OR IN PART WITHOUT THE EXPRESS WRITTEN PERMISSION OF SAME.

Professional Engineer's Name: LOWELL W. McBURNEY
Professional Engineer's No.: 10767
State: NH | Date Signed: | Project Mgr.: CRA
Designed by: MAM | Drawn by: . | Checked by: .

DRAFT FOR EPA REVIEW

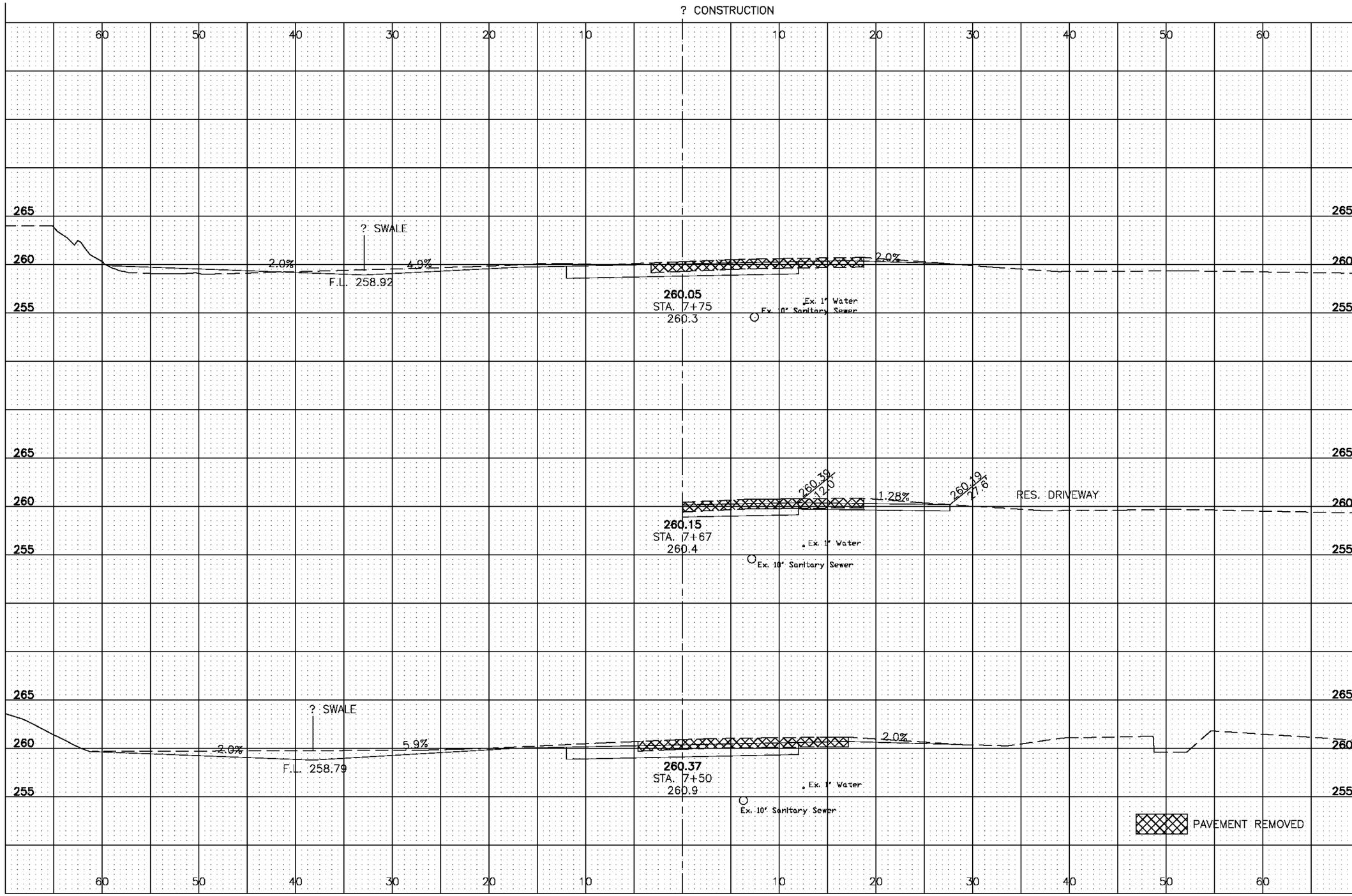
ARCADIS
ARCADIS U.S., INC.

GENERAL ELECTRIC COMPANY
FLETCHER'S PAINT WORKS AND STORAGE FACILITY SUPERFUND SITE
MILFORD, NEW HAMPSHIRE
FINAL (100%) DESIGN REPORT

CROSS SECTION STA 6+75 TO STA 7+25 - MILL STREET AREA

ARCADIS Project No. B0020985.0002.00008
Date NOVEMBER 2012
ARCADIS OF NEW YORK
6723 TOWPATH ROAD
P.O. BOX 66
SYRACUSE, NEW YORK
TEL. 315.446.9120

T-11



	END AREA		VOLUME	
	CUT	FILL	CUT	FILL
	SQ. YD.	SQ. YD.	CU. YD.	CU. YD.
	44	3		
			47	2
	47	1		
			39	6
SUBTOTAL	86	8		

CITY: SYRACUSE DIV/GROUP: ENVCAD DB: L. POSENAUER G. STOWELL L. FORAKER K.SARTORI PIC: P. FARR PM: C. AVERILL TM: C. AVERILL LYR: ON=*; OFF=*REF*
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XREFS: 20986X00 IMAGES: PROJECTNAME: —

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

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No.	Date	Revisions	By	Ckd

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Professional Engineer's Name: LOWELL W. McBURNEY
Professional Engineer's No.: 10767

State	Date Signed	Project Mgr.
NH		CRA
Designed by	Drawn by	Checked by
MAM	.	.

DRAFT FOR EPA REVIEW

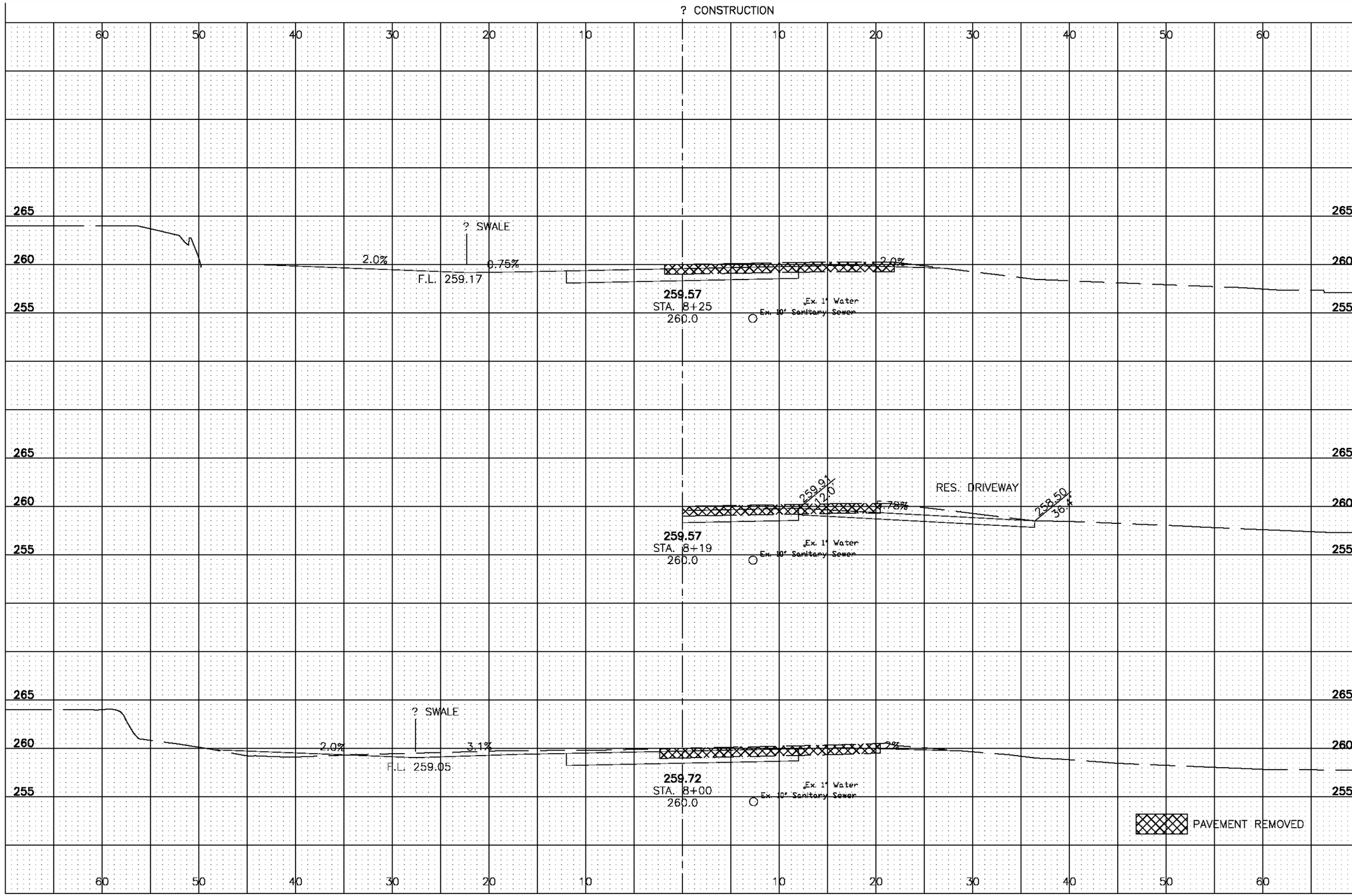
ARCADIS
ARCADIS U.S., INC.

GENERAL ELECTRIC COMPANY
FLETCHER'S PAINT WORKS AND STORAGE FACILITY SUPERFUND SITE
MILFORD, NEW HAMPSHIRE
FINAL (100%) DESIGN REPORT

CROSS SECTION STA 7+50 TO STA 7+75 - MILL STREET AREA

ARCADIS Project No. B0020985.0002.00006
Date NOVEMBER 2012
ARCADIS OF NEW YORK
6723 TOWPATH ROAD
P.O. BOX 66
SYRACUSE, NEW YORK
TEL. 315.446.9120

T-12



	END AREA		VOLUME	
	CUT	FILL	CUT	FILL
	SQ. YD.	SQ. YD.	CU. YD.	CU. YD.
	45	0		
			41	5
	43	10		
			40	6
SUBTOTAL			81	11

CITY: SYRACUSE DIV/GROUP: ENVCAD DB: L. POSENAUER G. STOWELL L. FORAKER K.SARTORI PIC: P. FARR PM: C. AVERILL TM: C. AVERILL LYR: ON=*; OFF=*REF*
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1"=5' 5' 0 5' 10'

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USE TO VERIFY FIGURE REPRODUCTION SCALE

No.	Date	Revisions	By	Ckd

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Professional Engineer's Name: LOWELL W. McBURNEY
Professional Engineer's No.: 10767
State: NH | Date Signed: | Project Mgr.: CRA
Designed by: MAM | Drawn by: . | Checked by: .

DRAFT FOR EPA REVIEW

ARCADIS
ARCADIS U.S., INC.

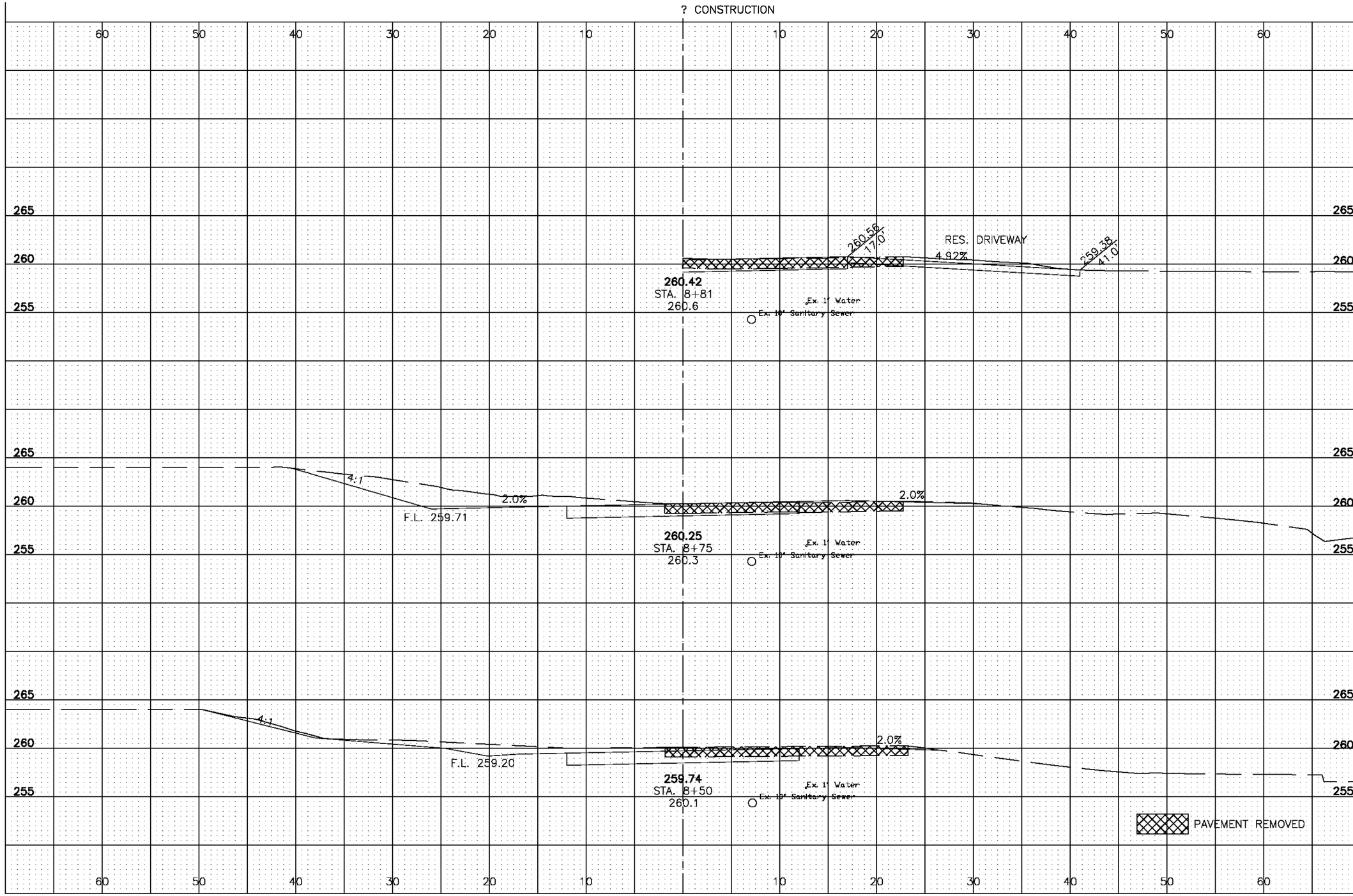
GENERAL ELECTRIC COMPANY
FLETCHER'S PAINT WORKS AND STORAGE FACILITY SUPERFUND SITE
MILFORD, NEW HAMPSHIRE
FINAL (100%) DESIGN REPORT

CROSS SECTION STA 8+00 TO STA 8+25 - MILL STREET AREA

ARCADIS Project No. B0020986.0002.00006
Date NOVEMBER 2012

ARCADIS OF NEW YORK
6723 TOWPATH ROAD
P.O. BOX 66
SYRACUSE, NEW YORK
TEL. 315.446.9120

T-13



	END AREA		VOLUME	
	CUT	FILL	CUT	FILL
	SQ. YD.	SQ. YD.	CU. YD.	CU. YD.
	52	0		
			44	0
	44	0		
			41	0
SUBTOTAL			102	0

1"=5' (5' 0 5' 10')

THIS BAR REPRESENTS ONE INCH ON THE ORIGINAL DRAWING: USE TO VERIFY FIGURE REPRODUCTION SCALE

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Professional Engineer's Name: LOWELL W. McBURNEY
Professional Engineer's No.: 10767
State: NH | Date Signed: | Project Mgr.: CRA
Designed by: MAM | Drawn by: . | Checked by: .

DRAFT FOR EPA REVIEW

ARCADIS
ARCADIS U.S., INC.

GENERAL ELECTRIC COMPANY
FLETCHER'S PAINT WORKS AND STORAGE FACILITY SUPERFUND SITE
MILFORD, NEW HAMPSHIRE
FINAL (100%) DESIGN REPORT

CROSS SECTION STA 8+50 TO STA 8+81 - MILL STREET AREA

ARCADIS Project No. B0020985.0002.00006
Date NOVEMBER 2012

ARCADIS OF NEW YORK
6723 TOWPATH ROAD
P.O. BOX 66
SYRACUSE, NEW YORK
TEL. 315.446.9120

T-14

CITY: SYRACUSE DIV/GROUP: ENVCAD DB: L. POSENAUER G. STOWELL L. FORAKER K.SARTORI PIC: P. FARR PM: C. AVERILL TM: C. AVERILL LYR: ON=*;OFF=REF*
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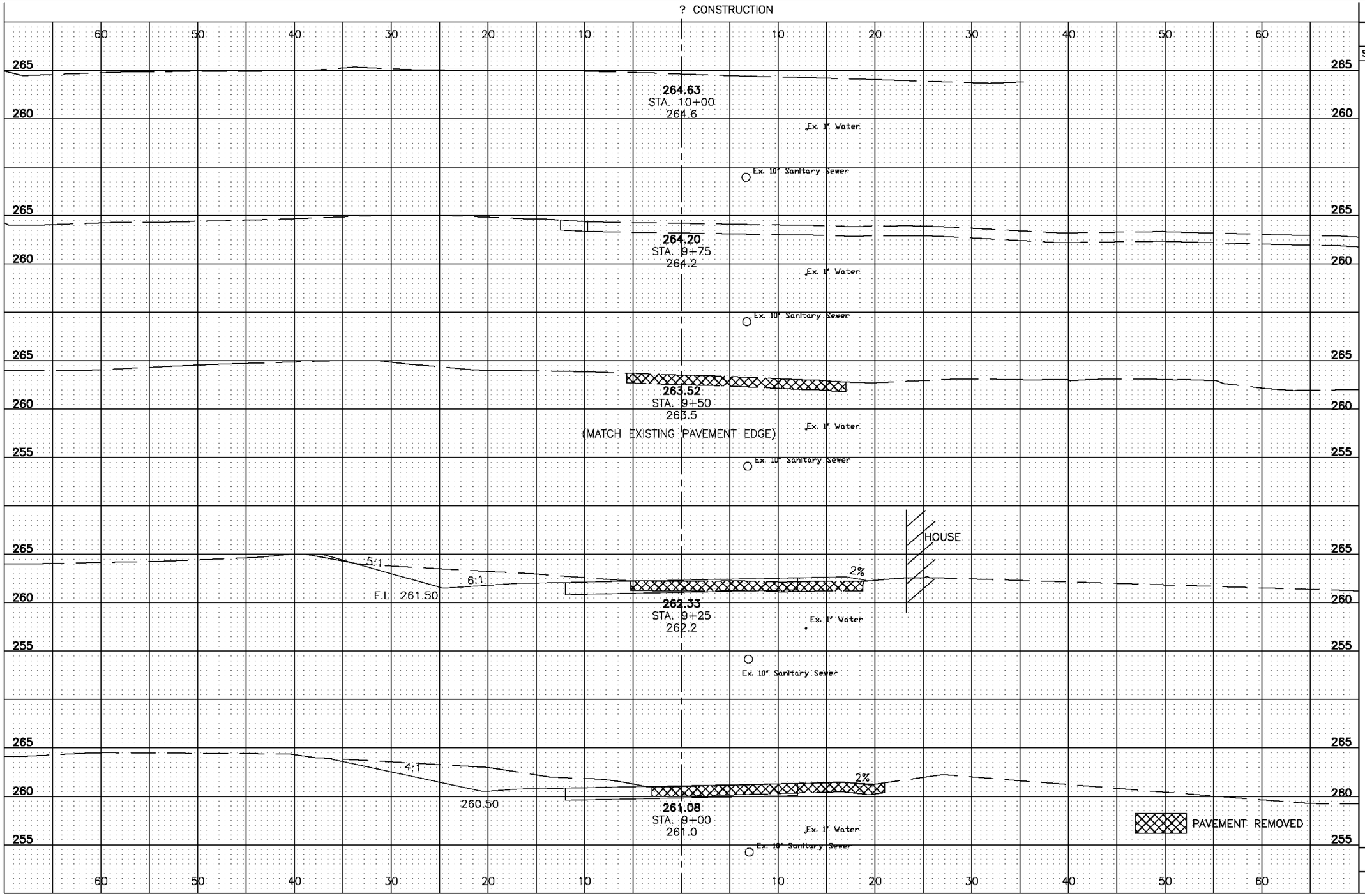

	END AREA		VOLUME	
	CUT	FILL	CUT	FILL
	SQ. YD.	SQ. YD.	CU. YD.	CU. YD.
	0	0		
			6	0
	6	0		
			6	0
	50	0		
			43	0
	43	1		
			46	1
	56	0		
			50	0
SUBTOTAL	151	1		
TOTAL	714	37		

CITY: SYRACUSE DIV/GROUP: ENVCAD DB: L. POSENAUER G. STOWELL L. FORAKER K.SARTORI PIC: P. FARR PM: C. AVERILL TM: C. AVERILL LYR: ON=*;OFF=REF*
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XREFS: 20985X00 IMAGES: PROJECTNAME: —

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

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No.	Date	Revisions	By	Ckd

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Professional Engineer's Name: LOWELL W. McBURNEY
Professional Engineer's No.: 10767
State: NH | Date Signed: | Project Mgr.: CRA
Designed by: MAM | Drawn by: . | Checked by: .

DRAFT FOR EPA REVIEW

ARCADIS
ARCADIS U.S., INC.

GENERAL ELECTRIC COMPANY
FLETCHER'S PAINT WORKS AND STORAGE FACILITY SUPERFUND SITE
MILFORD, NEW HAMPSHIRE
FINAL (100%) DESIGN REPORT

CROSS SECTION STA 9+00 TO STA 10+00 - MILL STREET AREA

ARCADIS Project No. B0020985.0002.00006
Date NOVEMBER 2012

ARCADIS OF NEW YORK
6723 TOWPATH ROAD
P.O. BOX 66
SYRACUSE, NEW YORK
TEL. 315.446.9120

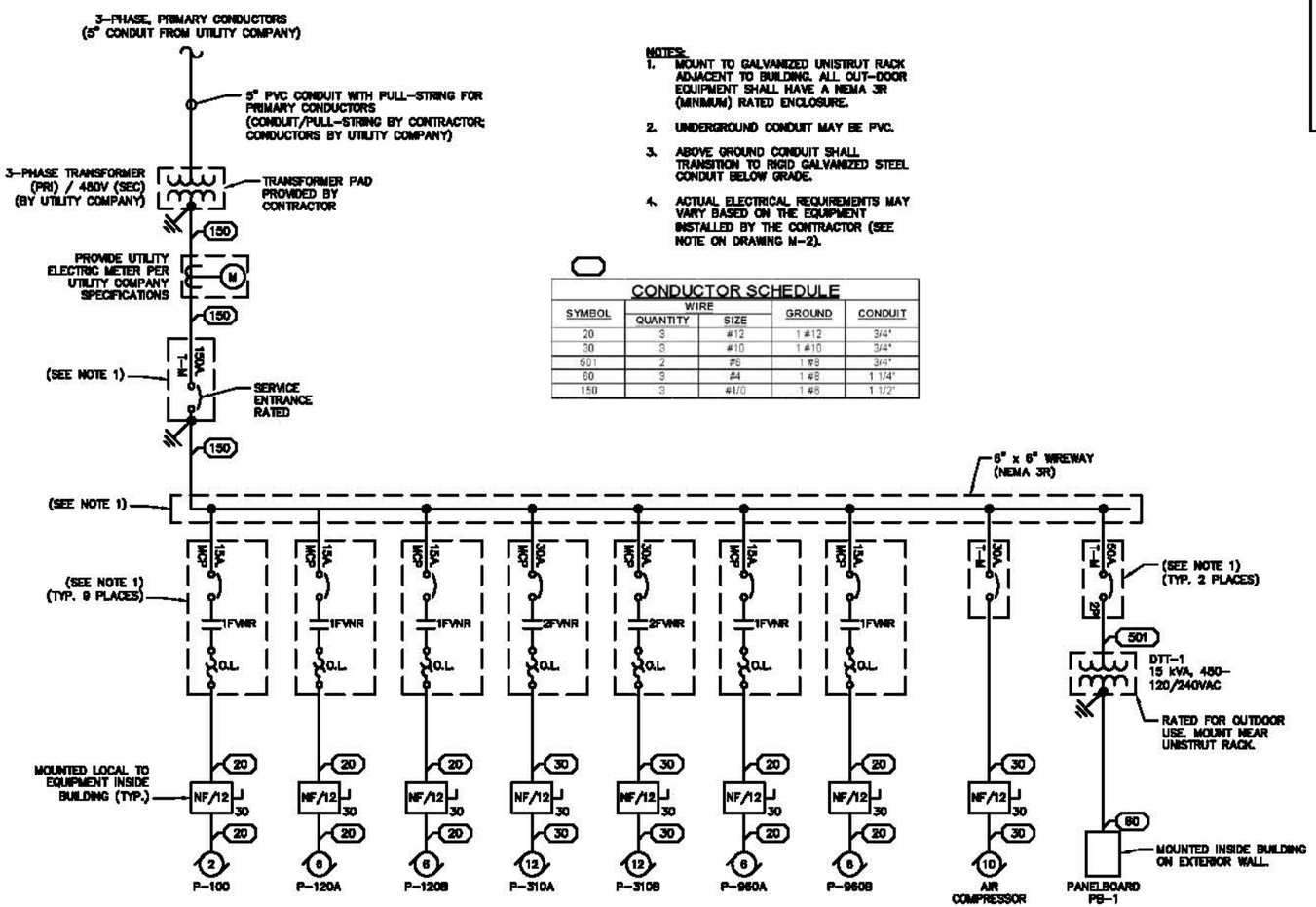
T-15

LEGEND

- ENCLOSURE LIMITS
- MOTOR STARTER, FVNR–TYPE EQUIPPED WITH THERMAL OVERLOADS (FULL VOLTAGE, NON–REVERSING)
- MOTOR, # DENOTES H.P.
- EARTH GROUND
- TRANSFORMER, POWER
- MOLDED CASE CIRCUIT BREAKER
- NF/12 — DISCONNECT SWITCH (NF = NON–FUSIBLE; 12 = NEMA 12)

ABBREVIATIONS

1FVNR	FULL VOLTAGE, NON–REVERSING (SIZE 1) STARTER
DTT	DRY TYPE TRANSFORMER
MCP	MOTOR CIRCUIT PROTECTOR CIRCUIT BREAKER
O.L.	OVERLOAD
T–M	THERMAL MAGNETIC CIRCUIT BREAKER



NOTES:

1. MOUNT TO GALVANIZED UNISTRUT RACK ADJACENT TO BUILDING. ALL OUT–DOOR EQUIPMENT SHALL HAVE A NEMA 3R (MINIMUM) RATED ENCLOSURE.
2. UNDERGROUND CONDUIT MAY BE PVC.
3. ABOVE GROUND CONDUIT SHALL TRANSITION TO RIGID GALVANIZED STEEL CONDUIT BELOW GRADE.
4. ACTUAL ELECTRICAL REQUIREMENTS MAY VARY BASED ON THE EQUIPMENT INSTALLED BY THE CONTRACTOR (SEE NOTE ON DRAWING M–2).

CONDUCTOR SCHEDULE

SYMBOL	WIRE QUANTITY	WIRE SIZE	GROUND	CONDUIT
20	3	#12	1 #12	3/4"
30	3	#10	1 #10	3/4"
501	2	#6	1 #8	3/4"
60	3	#4	1 #8	1 1/4"
150	3	#1/0	1 #6	1 1/2"

NOT TO SCALE

THIS BAR REPRESENTS ONE INCH ON THE ORIGINAL DRAWING: USE TO VERIFY FIGURE REPRODUCTION SCALE

No.	Date	Revisions	By	Ckd

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Professional Engineer's Name: LOWELL W. McBURNEY
Professional Engineer's No.: 10767
State: NH | Date Signed: | Project Mgr.: CRA
Designed by: MAM | Drawn by: MAM | Checked by: .

DRAFT FOR EPA REVIEW

ARCADIS
ARCADIS U.S., INC.

GENERAL ELECTRIC COMPANY
FLETCHER'S PAINT WORKS AND STORAGE FACILITY SUPERFUND SITE
MILFORD, NEW HAMPSHIRE
FINAL (100%) DESIGN REPORT

TEMPORARY WATER TREATMENT SYSTEM - ONE-LINE DIAGRAM - MILL STREET AREA

ARCADIS Project No. B0020985.0002.00006
Date NOVEMBER 2012

ARCADIS OF NEW YORK
6723 TOWPATH ROAD
P.O. BOX 66
SYRACUSE, NEW YORK
TEL. 315.446.9120

E-1

STY:-BS-GHS KLS GHS LAYER: ON=*, OFF=*REF*
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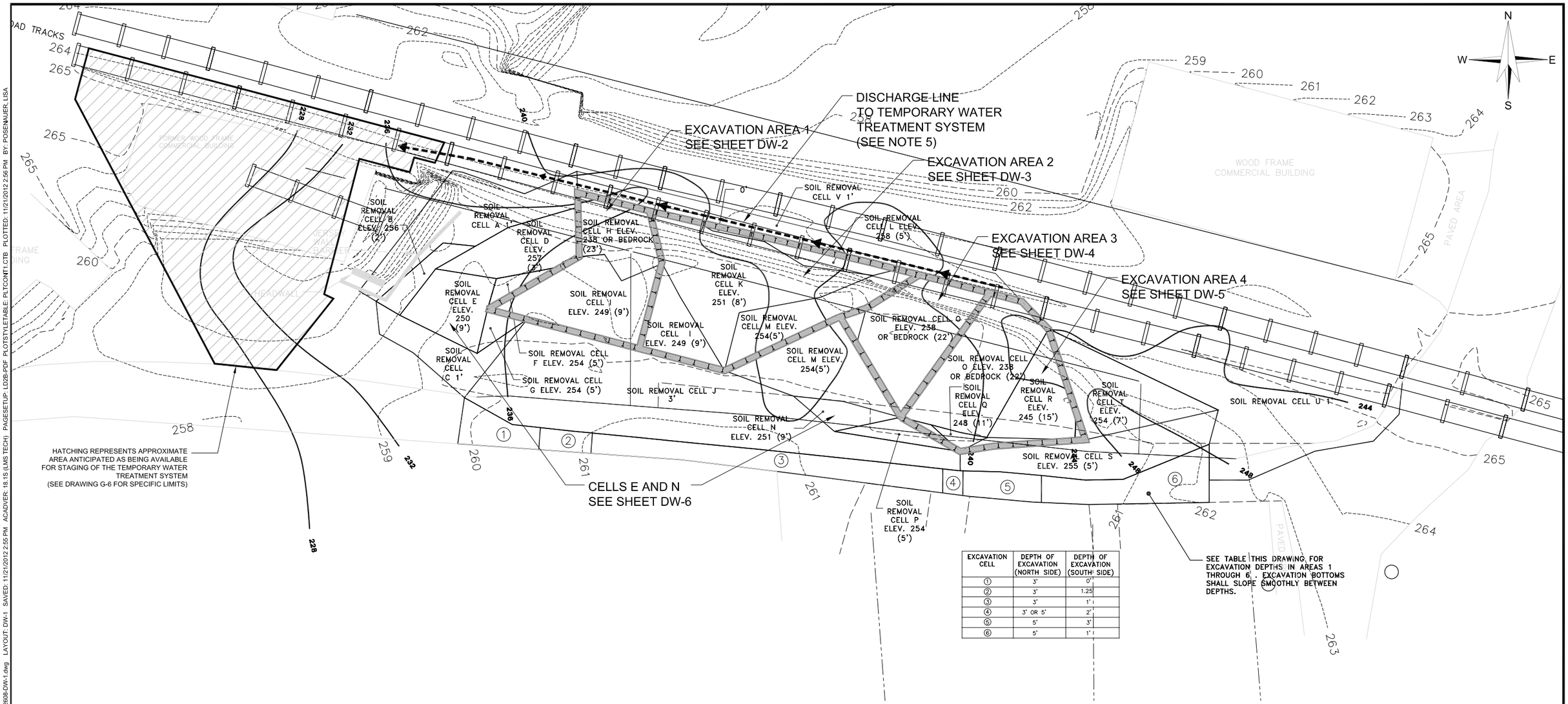

EXCAVATION CELL	DEPTH OF EXCAVATION (NORTH SIDE)	DEPTH OF EXCAVATION (SOUTH SIDE)
1	3'	0'
2	3'	1.25
3	3'	1'
4	3' OR 5'	2'
5	5'	3'
6	5'	1'

LEGEND:

- APPROXIMATE LOCATION AND FLOW DIRECTION FOR DEWATERING DISCHARGE PIPELINE (SEE NOTE 6)
- APPROXIMATE LOCATION OF SOLDIER PILE TREMIE CONCRETE WALL
- ELEV. 252 (5') — BOTTOM OF EXCAVATION ELEVATION. DEPTH SHOWN IN PARENTHESES IS APPROXIMATE. THE CONTRACTOR SHALL EXCAVATE TO SPECIFIED ELEVATION WHERE NOTED. THE CONTRACTOR SHALL EXCAVATE TO THE SPECIFIED DEPTH WHERE ELEVATION IS NOT NOTED.
- 260 — EXISTING INDEX SURFACE ELEVATION CONTOUR
- 238 — TOP OF BEDROCK ELEVATION CONTOUR IN FEET (SEE NOTE 2 ON SHEET DW-2)

NOTES:

1. ALL ELEVATIONS ARE IN FEET AND REFERENCE NORTH AMERICAN VERTICAL DATUM OF 1988.
2. PHASE 1 EXCAVATION SHALL CONSIST OF PERFORMING DEEP EXCAVATION OF AREAS 1 THROUGH 4 WITHIN LIMITS OF SOLDIER PILE TREMIE CONCRETE (SPTC) WALLS INDICATED ON THIS PLAN. REFER TO DRAWINGS S-9 AND S-10 FOR GENERAL CONSTRUCTION SEQUENCING REQUIREMENTS.
3. PHASE 2 EXCAVATION SHALL CONSIST OF PERFORMING SHALLOW EXCAVATION OUTSIDE LIMITS OF SPTC WALLS, AFTER COMPLETION OF PHASE 1 EXCAVATION, DEWATERING, AND BACKFILLING.
4. SEE SHEETS DW-2 THROUGH DW-5 FOR DEWATERING SYSTEM LAYOUT FOR INDIVIDUAL PHASE 1 EXCAVATION AREAS, AND SHEET DW-6 FOR PHASE 2 DEWATERING SYSTEM LAYOUT.
5. ALL GROUNDWATER DISCHARGE SHALL BE ROUTED TO TEMPORARY GROUNDWATER TREATMENT SYSTEM. DISCHARGE CAPACITY OF THIS SYSTEM SHALL BE 150 GPM. THE CONTRACTOR SHALL CONTROL ALL DEWATERING ACTIVITIES SUCH THAT THE MAXIMUM DISCHARGE RATE DOES NOT EXCEED THE CAPACITY OF THIS SYSTEM.
6. LOCATION OF DISCHARGE LINE IS CONCEPTUAL ONLY. CONTRACTOR SHALL SELECT ACTUAL LOCATION BASED ON ITS SEQUENCING OF OPERATIONS AND SITE USAGE NEEDS.
7. REFER TO SPECIFICATION SECTION MP-02240 FOR ADDITIONAL DEWATERING SYSTEM REQUIREMENTS.

ORIGINAL SCALE APPLIES TO 22"X34" DRAWING
0 20 40 60 FT

THIS DRAWING WAS PREPARED AT THE SCALE(S) INDICATED. INACCURACIES IN THE STATED SCALE(S) MAY BE INTRODUCED WHEN DRAWINGS ARE REPRODUCED. **USE THE GRAPHIC SCALE BAR(S) TO DETERMINE THE ACTUAL SCALE(S) OF THIS DRAWING.**

No.	Date	Revisions	Init

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Professional Engineer's Name: XXXX
Professional Engineer's No.: XXX
State: XXX | Date Signed:
Project Mgr.: DRS | Designed by: RBD/JRK | Drawn by: BV

DRAFT
FOR EPA REVIEW

PREPARED BY: HALEY & ALDRICH
FOR: ARCADIS U.S., INC.

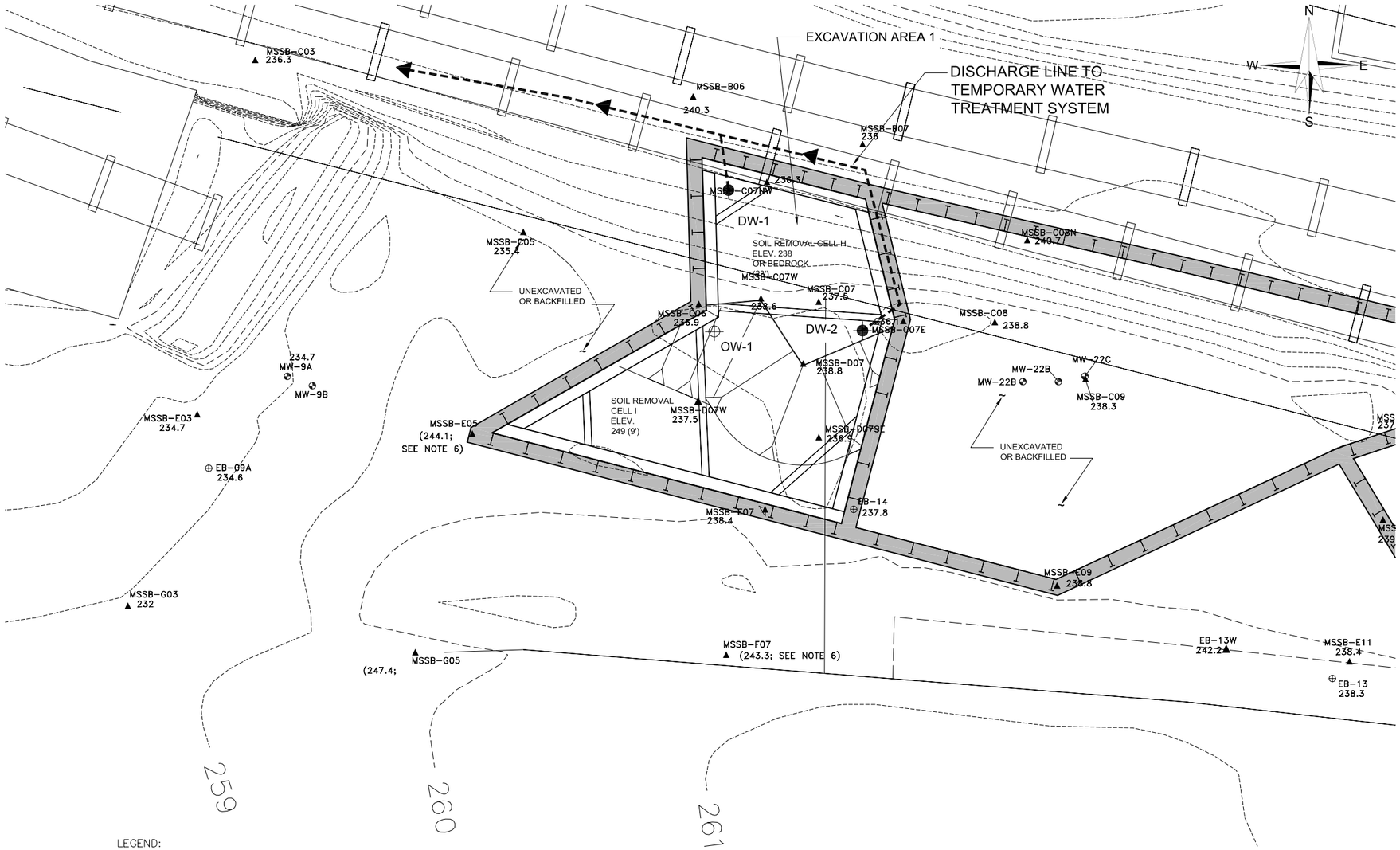
GENERAL ELECTRIC COMPANY
FLETCHER'S PAINT WORKS AND STORAGE FACILITY SUPERFUND SITE
MILFORD, NEW HAMPSHIRE
FINAL (100%) DESIGN REPORT

EXCAVATION DEWATERING MASTER PLAN - MILL STREET AREA

HALEY & ALDRICH Project No. 32608-003
Date NOVEMBER 2012
HALEY & ALDRICH, Inc.
465 Medford Street
Boston, MA 02129
617.886.7400

DW-1

CITY: SYRACUSE-NY LYR:ON=*;OFF=*REF*
V:\ENVCAD\SYRACUSE\ACT\CB\002085\00200006\DWG\CONTRACT\OFF-SITE\H&A\2012-11\21-32608-DW-1.dwg LAYOUT: DW-1 SAVED: 11/21/2012 2:55 PM ACADVER: 18.1S (LMS TECH) PAGESETUP: LD2B-PDF PLOTSTYLETABLE: PLTCONT1.CTB PLOTTED: 11/21/2012 2:56 PM BY: POSENAUER, LISA



LEGEND:

▲ MSSB-C07	PRE-DESIGN INVESTIGATION POWER PROBE BORING LOCATION
⊕ EB-13	HISTORIC EPA BORING LOCATION
MW-8B	MONITORING WELL
238.3	TOP OF BEDROCK ELEVATION

LEGEND:

260	EXISTING INDEX SURFACE ELEVATION CONTOUR
	APPROXIMATE LOCATION AND FLOW DIRECTION FOR DEWATERING DISCHARGE PIPELINE
	APPROXIMATE LOCATION OF SOLDIER PILE TREMIE CONCRETE WALL
	APPROXIMATE LIMITS OF 1.5H:1V EXCAVATED SLOPE
ELEV. 252 (5')	BOTTOM OF EXCAVATION ELEVATION. DEPTH SHOWN IN PARENTHESES IS APPROXIMATE. THE CONTRACTOR SHALL EXCAVATE TO SPECIFIED ELEVATION WHERE NOTED. THE CONTRACTOR SHALL EXCAVATE TO THE SPECIFIED DEPTH WHERE ELEVATION IS NOT NOTED.
	APPROXIMATE LOCATION OF DEEP DEWATERING WELL (SEE DETAIL ON SHEET DW-7)
	APPROXIMATE LOCATION OF OBSERVATION WELL (SEE DETAIL ON SHEET DW-7)

NOTES:

1. ALL ELEVATIONS ARE IN FEET AND REFERENCE NORTH AMERICAN VERTICAL DATUM OF 1988.
2. SUBSURFACE EXPLORATION LOCATIONS AND TOP OF BEDROCK ELEVATIONS SHOWN ON THIS PLAN AND BEDROCK ELEVATION CONTOURS SHOWN ON SHEET DW-1 ARE FOR GENERAL INFORMATION PURPOSES ONLY AND WERE OBTAINED FROM FIGURE 17 FROM THE PRE DESIGN REPORT BY BBL.
3. THE CONTRACTOR SHALL COMPLETE TOE PIN DRILLING AND GROUTING BENEATH SPTC WALL SURROUNDING EACH INDIVIDUAL EXCAVATION AREA PRIOR TO OPERATING THE DEWATERING SYSTEM COMPONENTS.
4. FOLLOWING INSTALLATION OF DEWATERING SYSTEM COMPONENTS FOR EACH PHASE 1 EXCAVATION AREA, THE CONTRACTOR SHALL PERFORM A PUMPING TEST EVALUATION AND SUBMIT RESULTS TO DESIGN ENGINEER. REFER TO SPECIFICATION SECTION MP-02240 FOR PURPOSE OF PUMPING TEST EVALUATION, AND ADDITIONAL REQUIREMENTS.

ORIGINAL SCALE APPLIES TO 22"X34" DRAWING
0 10 20 30 FT

THIS DRAWING WAS PREPARED AT THE SCALE(S) INDICATED. INACCURACIES IN THE STATED SCALE(S) MAY BE INTRODUCED WHEN DRAWINGS ARE REPRODUCED. **USE THE GRAPHIC SCALE BAR(S) TO DETERMINE THE ACTUAL SCALE(S) OF THIS DRAWING.**

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Professional Engineer's Name: XXX
Professional Engineer's No.: XXXX
State: XXX
Date Signed:
Project Mgr.: DRS
Designed by: RBD/JRK
Drawn by: BV

DRAFT
FOR EPA REVIEW

PREPARED BY: HALEY & ALDRICH
FOR: ARCADIS
ARCADIS U.S., INC.

GENERAL ELECTRIC COMPANY
FLETCHER'S PAINT WORKS AND STORAGE FACILITY SUPERFUND SITE
MILFORD, NEW HAMPSHIRE
FINAL (100%) DESIGN REPORT

SPTC EXCAVATION AREA 1
DEWATERING SYSTEM REQUIREMENTS - MILL STREET AREA

HALEY & ALDRICH Project No. 32608-003
Date NOVEMBER 2012
HALEY & ALDRICH, Inc.
465 Medford Street
Boston, MA 02129
617.886.7400

DW-2

CITY: SYRACUSE-NY LYR:ON=*;OFF=*REF*
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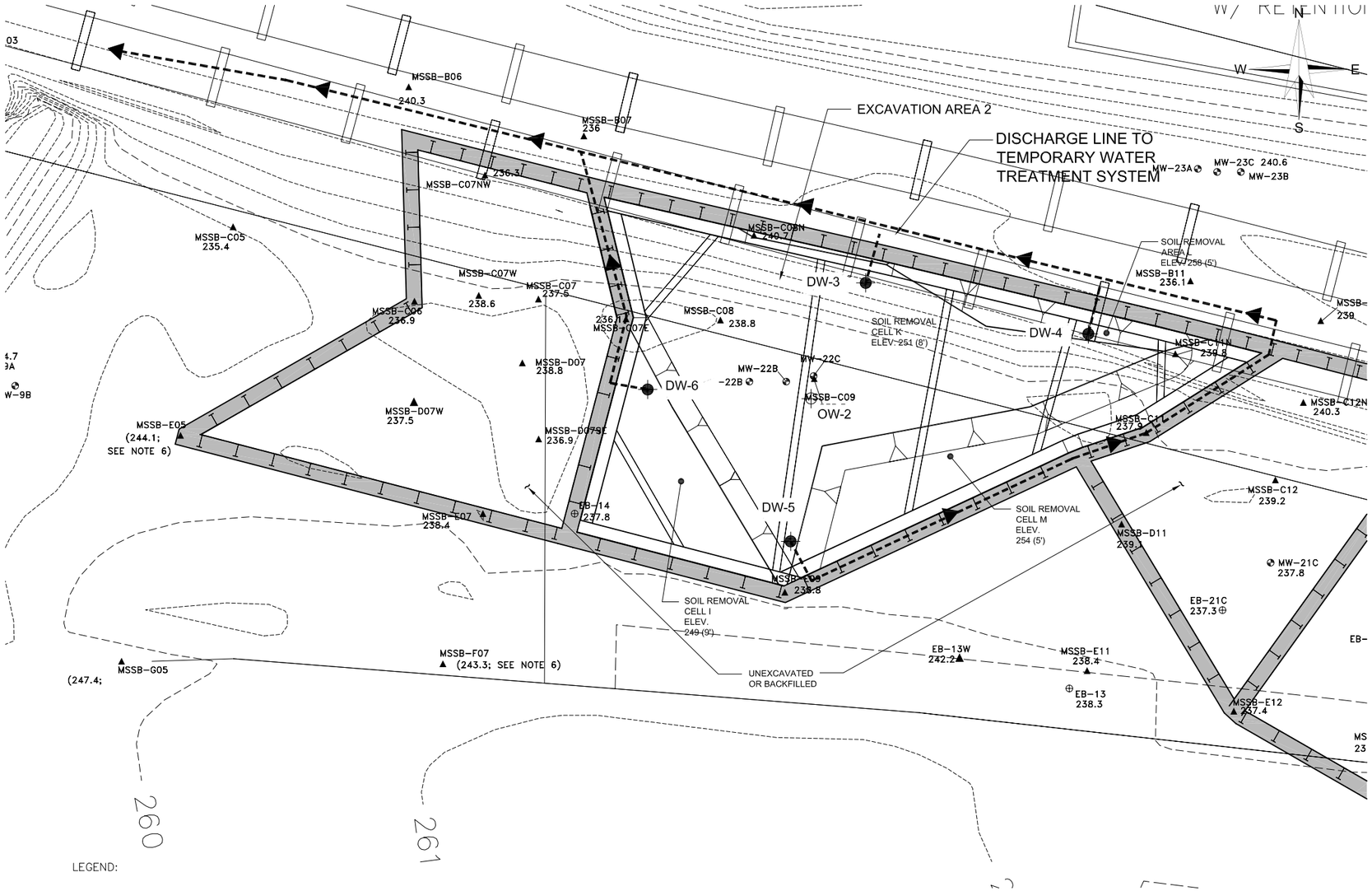

LEGEND:

▲ MSSB-C07	PRE-DESIGN INVESTIGATION POWER PROBE BORING LOCATION
⊕ EB-13	HISTORIC EPA BORING LOCATION
◐ MW-8B	MONITORING WELL
238.3	TOP OF BEDROCK ELEVATION

LEGEND:

260	EXISTING INDEX SURFACE ELEVATION CONTOUR
	APPROXIMATE LOCATION AND FLOW DIRECTION FOR DEWATERING DISCHARGE PIPELINE
	APPROXIMATE LOCATION OF SOLDIER PILE TREMIE CONCRETE WALL
	APPROXIMATE LIMITS OF 1.5H:1V EXCAVATED SLOPE
ELEV. 252 (5')	BOTTOM OF EXCAVATION ELEVATION. DEPTH SHOWN IN PARENTHESES IS APPROXIMATE. THE CONTRACTOR SHALL EXCAVATE TO SPECIFIED ELEVATION WHERE NOTED. THE CONTRACTOR SHALL EXCAVATE TO THE SPECIFIED DEPTH WHERE ELEVATION IS NOT NOTED.
	APPROXIMATE LOCATION OF OBSERVATION WELL (SEE DETAIL ON SHEET DW-7)
	APPROXIMATE LOCATION OF DEEP DEWATERING WELL (SEE DETAIL ON SHEET DW-7)

NOTES:

1. REFER TO DRAWINGS DW-1 AND DW-2

ORIGINAL SCALE APPLIES TO 22"X34" DRAWING

0 10 20. 30 FT

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No.	Date	Revisions	Init

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Professional Engineer's Name: XXX
Professional Engineer's No.: XXXX
State: XXX
Date Signed:
Project Mgr.: DRS
Designed by: RBD/JRK
Drawn by: BV

DRAFT
FOR EPA REVIEW

PREPARED BY: HALEY & ALDRICH
FOR: ARCADIS
ARCADIS U.S., INC.

GENERAL ELECTRIC COMPANY
FLETCHER'S PAINT WORKS AND STORAGE FACILITY SUPERFUND SITE
MILFORD, NEW HAMPSHIRE
FINAL (100%) DESIGN REPORT

SPTC EXCAVATION AREA 2
DEWATERING SYSTEM REQUIREMENTS - MILL STREET AREA

HALEY & ALDRICH Project No. 32608-003
Date NOVEMBER 2012
HALEY & ALDRICH, Inc.
465 Medford Street
Boston, MA 02129
617.886.7400

DW-3

CITY: SYRACUSE-NY LYR:ON=*;OFF=*REF*
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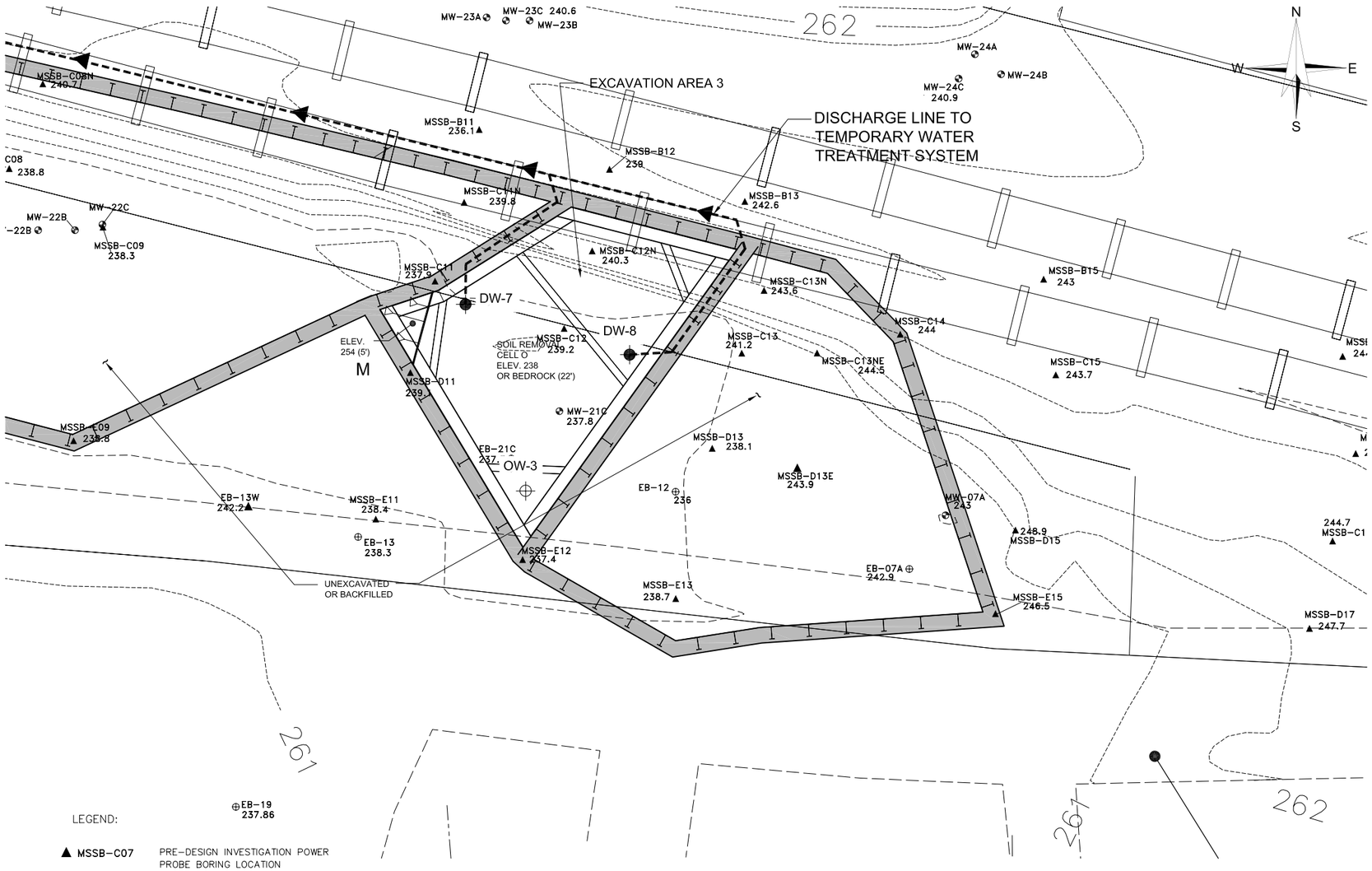

LEGEND:

260	EXISTING INDEX SURFACE ELEVATION CONTOUR
	APPROXIMATE LOCATION AND FLOW DIRECTION FOR DEWATERING DISCHARGE PIPELINE
	APPROXIMATE LOCATION OF SOLDIER PILE TREMIE CONCRETE WALL
	APPROXIMATE LIMITS OF 1.5H:1V EXCAVATED SLOPE
ELEV. 252 (5')	BOTTOM OF EXCAVATION ELEVATION. DEPTH SHOWN IN PARENTHESES IS APPROXIMATE. THE CONTRACTOR SHALL EXCAVATE TO SPECIFIED ELEVATION WHERE NOTED. THE CONTRACTOR SHALL EXCAVATE TO THE SPECIFIED DEPTH WHERE ELEVATION IS NOT NOTED.
	APPROXIMATE LOCATION OF DEEP DEWATERING WELL (SEE DETAIL ON SHEET DW-7)
	APPROXIMATE LOCATION OF OBSERVATION WELL (SEE DETAIL ON SHEET DW-7)

NOTES:

1. REFER TO DRAWINGS DW-1 AND DW-2

LEGEND:

▲ MSSB-C07	PRE-DESIGN INVESTIGATION POWER PROBE BORING LOCATION
⊕ EB-13	HISTORIC EPA BORING LOCATION
MW-8B	MONITORING WELL
238.3	TOP OF BEDROCK ELEVATION

ORIGINAL SCALE APPLIES TO 22"X34" DRAWING

0 10 20 30 FT

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Professional Engineer's Name: XXX
Professional Engineer's No.: XXXX
State: XXX
Date Signed:
Project Mgr.: DRS
Designed by: RBD/JRK
Drawn by: BV

DRAFT
FOR EPA REVIEW

PREPARED BY: HALEY & ALDRICH
FOR: ARCADIS U.S., INC.

GENERAL ELECTRIC COMPANY
FLETCHER'S PAINT WORKS AND STORAGE FACILITY SUPERFUND SITE
MILFORD, NEW HAMPSHIRE
FINAL (100%) DESIGN REPORT

SPTC EXCAVATION AREA 3
DEWATERING SYSTEM REQUIREMENTS - MILL STREET AREA

HALEY & ALDRICH Project No. 32608-003
Date NOVEMBER 2012
HALEY & ALDRICH, Inc.
465 Medford Street
Boston, MA 02129
617.886.7400

DW-4

CITY: SYRACUSE-NY LYR:ON=*;OFF=*REF*
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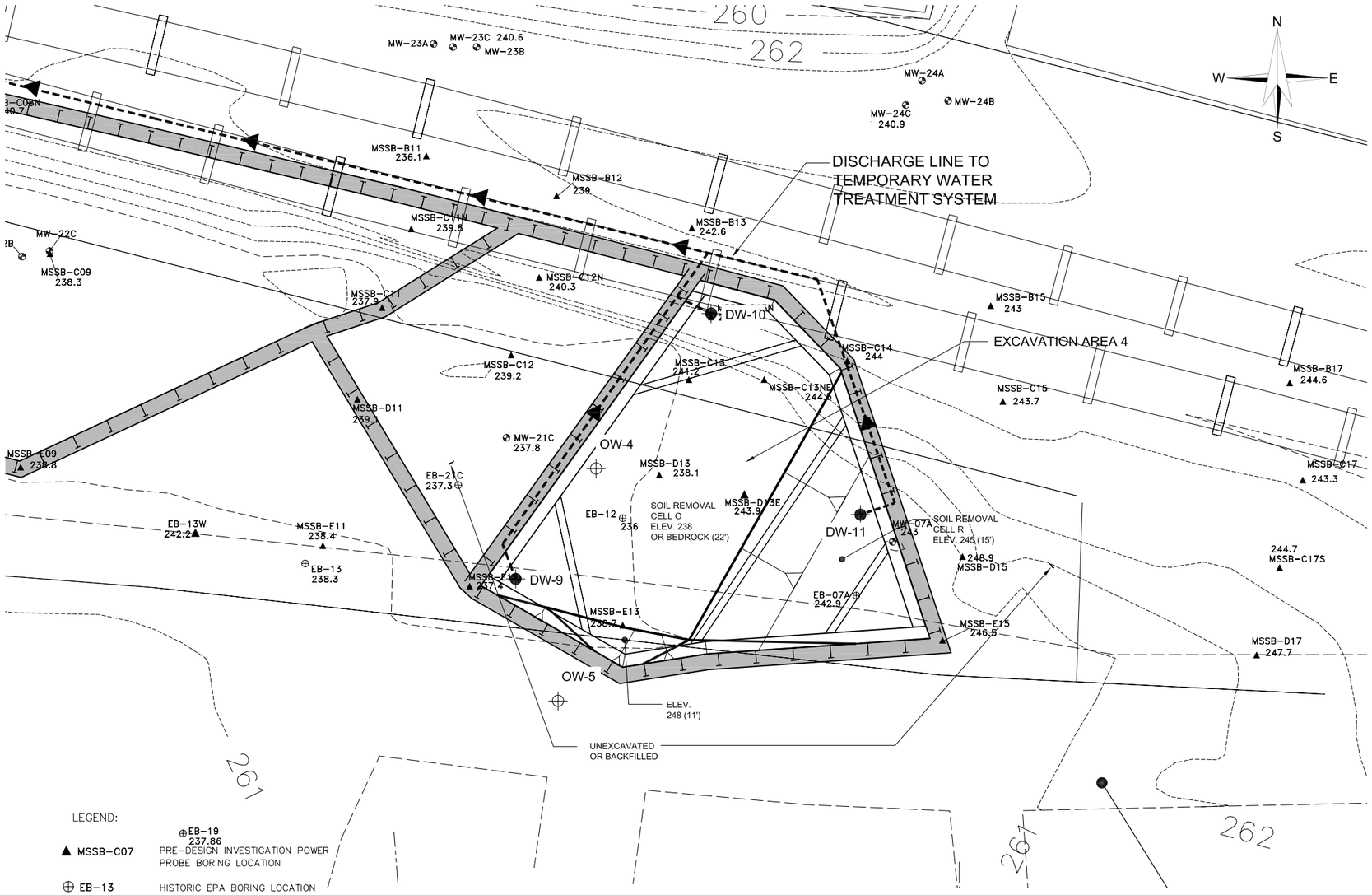

LEGEND:

260	EXISTING INDEX SURFACE ELEVATION CONTOUR
	APPROXIMATE LOCATION AND FLOW DIRECTION FOR DEWATERING DISCHARGE PIPELINE
	APPROXIMATE LOCATION OF SOLDIER PILE TREMIE CONCRETE WALL
	APPROXIMATE LIMITS OF 1.5H:1V EXCAVATED SLOPE
ELEV. 252 (5')	BOTTOM OF EXCAVATION ELEVATION. DEPTH SHOWN IN PARENTHESES IS APPROXIMATE. THE CONTRACTOR SHALL EXCAVATE TO SPECIFIED ELEVATION WHERE NOTED. THE CONTRACTOR SHALL EXCAVATE TO THE SPECIFIED DEPTH WHERE ELEVATION IS NOT NOTED.
	APPROXIMATE LOCATION OF DEEP DEWATERING WELL (SEE DETAIL ON SHEET DW-7)
	APPROXIMATE LOCATION OF OBSERVATION WELL (SEE DETAIL ON SHEET DW-7)

NOTES:

1. REFER TO DRAWINGS DW-1 AND DW-2

LEGEND:

▲ MSSB-C07	PRE-DESIGN INVESTIGATION POWER PROBE BORING LOCATION
⊕ EB-13	HISTORIC EPA BORING LOCATION
MW-8B	MONITORING WELL
238.3	TOP OF BEDROCK ELEVATION

⊕EB-19 237.86

ORIGINAL SCALE APPLIES TO 22"X34" DRAWING

0 10 20 30 FT

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Professional Engineer's Name: XXX
Professional Engineer's No.: XXXX
State: XXX
Date Signed:
Project Mgr.: DRS
Designed by: RBD/JRK
Drawn by: BV

DRAFT
FOR EPA REVIEW

PREPARED BY: HALEY & ALDRICH
FOR: ARCADIS U.S., INC.

GENERAL ELECTRIC COMPANY
FLETCHER'S PAINT WORKS AND STORAGE FACILITY SUPERFUND SITE
MILFORD, NEW HAMPSHIRE
FINAL (100%) DESIGN REPORT

SPTC EXCAVATION AREA 4
DEWATERING SYSTEM REQUIREMENTS - MILL STREET AREA

HALEY & ALDRICH Project No. 32608-003
Date NOVEMBER 2012
HALEY & ALDRICH, Inc.
465 Medford Street
Boston, MA 02129
617.886.7400

DW-5

CITY: SYRACUSE-NY LYR:ON=*;OFF=*REF*
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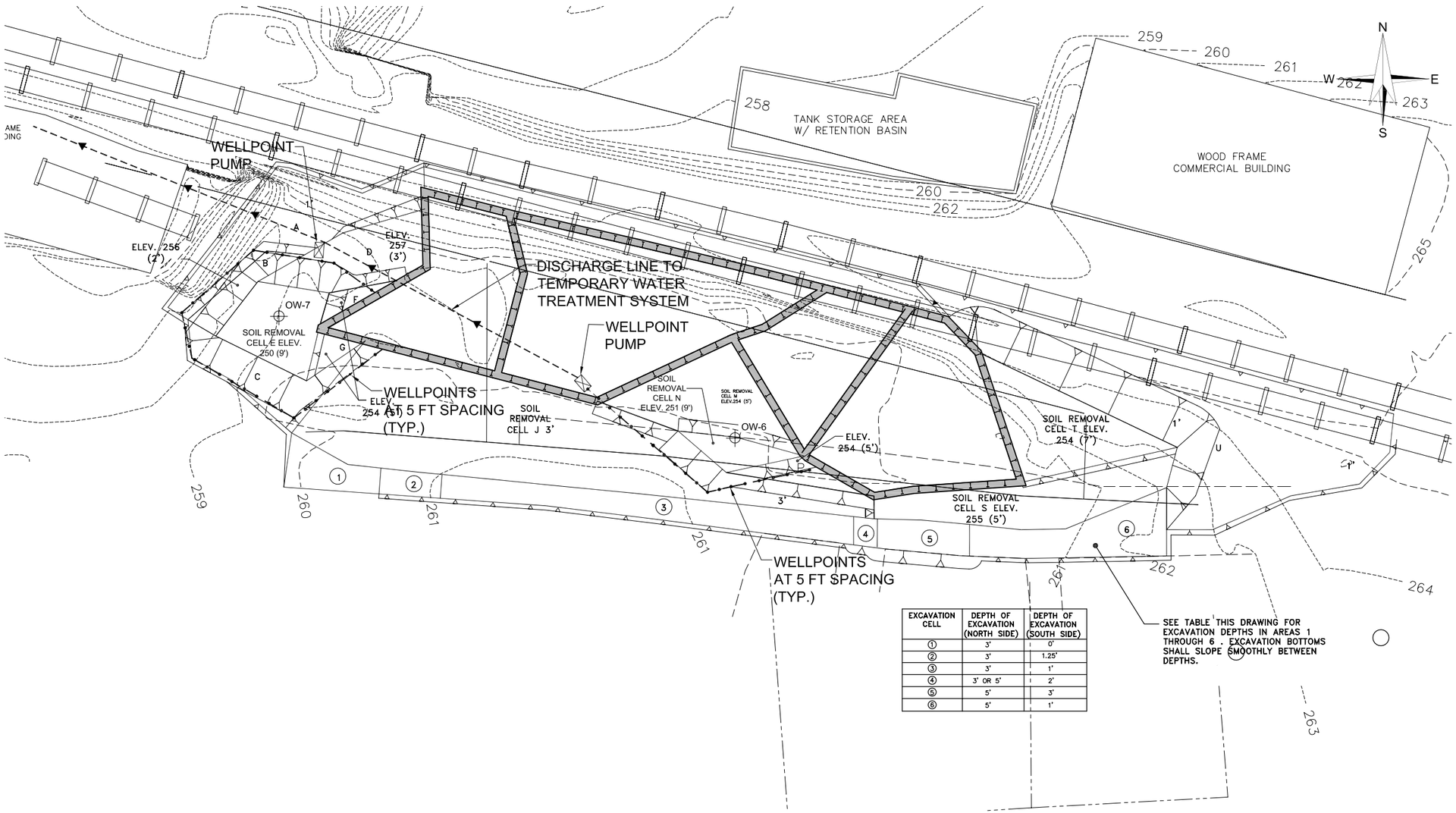

EXCAVATION CELL	DEPTH OF EXCAVATION (NORTH SIDE)	DEPTH OF EXCAVATION (SOUTH SIDE)
1	3'	0'
2	3'	1.25'
3	3'	1'
4	3' OR 5'	2'
5	5'	3'
6	5'	1'

LEGEND:

- 260 — EXISTING INDEX SURFACE ELEVATION CONTOUR
- APPROXIMATE LOCATION AND FLOW DIRECTION FOR DEWATERING DISCHARGE PIPELINE
- APPROXIMATE LOCATION OF SOLDIER PILE TREMIE CONCRETE WALL
- APPROXIMATE LIMITS OF 1.5H:1V EXCAVATED SLOPE
- ELEV. 252 (5') — BOTTOM OF EXCAVATION ELEVATION. DEPTH SHOWN IN PARENTHESES IS APPROXIMATE. THE CONTRACTOR SHALL EXCAVATE TO SPECIFIED ELEVATION WHERE NOTED. THE CONTRACTOR SHALL EXCAVATE TO THE SPECIFIED DEPTH WHERE ELEVATION IS NOT NOTED.
- APPROXIMATE LOCATION OF OBSERVATION WELL (SEE DETAIL ON SHEET DW-7)
- APPROXIMATE LOCATION OF WELLPOINT AND HEADER PIPE SYSTEM (SEE DETAIL ON SHEET DW-7)

NOTES:

1. REFER TO DRAWINGS DW-1 AND DW-2

ORIGINAL SCALE APPLIES TO 22"X34" DRAWING

0 20 40 60 FT

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Professional Engineer's Name: XXX
Professional Engineer's No.: XXXX
State: XXX
Date Signed:
Project Mgr.: DRS
Designed by: RBD/JRK
Drawn by: BV

DRAFT
FOR EPA REVIEW

PREPARED BY: HALEY & ALDRICH
FOR: ARCADIS U.S., INC.

GENERAL ELECTRIC COMPANY
FLETCHER'S PAINT WORKS AND STORAGE FACILITY SUPERFUND SITE
MILFORD, NEW HAMPSHIRE
FINAL (100%) DESIGN REPORT

SPTC PHASE 2
DEWATERING SYSTEM REQUIREMENTS - MILL STREET AREA

HALEY & ALDRICH Project No. 32608-003
Date NOVEMBER 2012
HALEY & ALDRICH, Inc.
465 Medford Street
Boston, MA 02129
617.886.7400

DW-6

CITY: SYRACUSE-NY LYR:ON=*;OFF=*REF*
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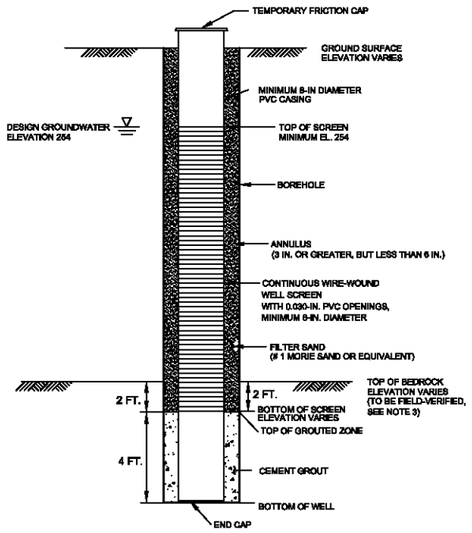
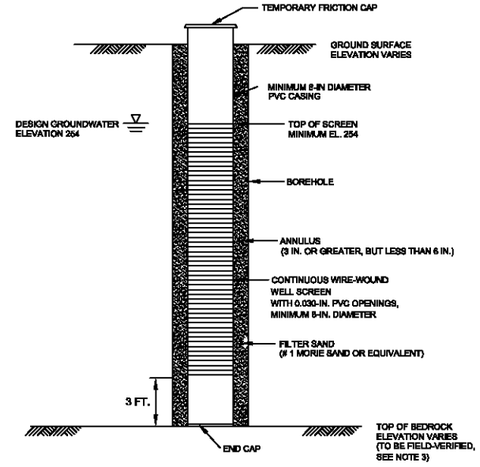


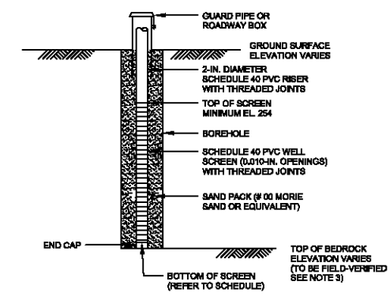
DEEP WELL DETAIL
FOR EXCAVATION AREAS 1, 3, AND 4
NOT TO SCALE



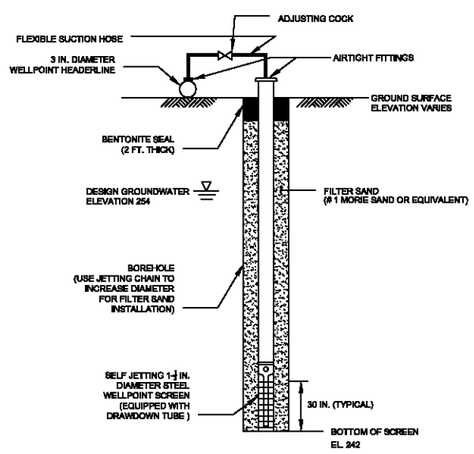
DEEP WELL DETAIL
FOR EXCAVATION AREA 2
NOT TO SCALE

OBSERVATION WELL NUMBER	APPROX. EXISTING GROUND SURFACE EL.	APPROX. TOP OF BEDROCK EL. (SEE NOTE 3)	APPROX. BOTTOM OF SCREEN EL.
	(FT)	(FT)	(FT)
OW-1	259	237	237
OW-2	260	237	237
OW-3	260	238	238
OW-4	260	238	238
OW-5	261	238	238
OW-6	259	238	238
OW-7	259	235	235

SCHEDULE OFOBSERVATION WELL QUANTITIES
NOT TO SCALE



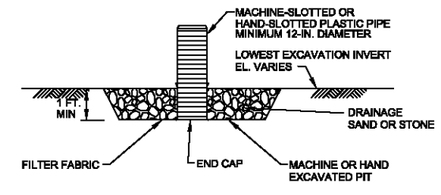
OBSERVATION WELL DETAIL
NOT TO SCALE



WELLPOINT DETAIL
NOT TO SCALE

NOTES:

1. PROJECT DESIGN GROUNDWATER ELEVATION IS EL. 254 NAVD 88; HOWEVER GROUNDWATER ELEVATIONS WILL VARY SEASONALLY AND ARE AFFECTED BY PUMPING STRESSES SUCH AS ADJACENT CONSTRUCTION DEWATERING.
2. PUMPING RATES WILL VARY BETWEEN LOCATIONS BASED ON THE ACTUAL SOIL CONDITIONS ENCOUNTERED.
3. TOP OF BEDROCK ELEVATIONS INDICATED ON SCHEDULE ARE APPROXIMATE AND ARE BASED ON AVAILABLE SUBSURFACE EXPLORATION DATA. ACTUAL TOP OF BEDROCK ELEVATION SHALL BE FIELD-VERIFIED BY CONTRACTOR DURING CONSTRUCTION. OBSERVATION WELLS AND DEEP WELLS SHALL BE INSTALLED AS PER REQUIREMENTS INDICATED ON THIS DRAWING, BASED ON THE FIELD-VERIFIED TOP OF BEDROCK ELEVATION.
4. OBSERVATION WELLS AND DEEP WELLS SHALL BE PROTECTED AND MAINTAINED DURING EXCAVATION SUCH THAT THEY FUNCTION WHILE EXCAVATION PROGRESSES.



SUMP DETAIL
NOT TO SCALE

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ORIGINAL SCALE APPLIES TO 22"X34" DRAWING

AS SHOWN

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Professional Engineer's Name: XXX
Professional Engineer's No.: XXXX
State: XXX | Date Signed:
Project Mgr.: DRS | Designed by: RBD/JRK | Drawn by: BV

DRAFT
FOR EPA REVIEW

PREPARED BY: HALEY & ALDRICH
FOR: ARCADIS
ARCADIS U.S., INC.

GENERAL ELECTRIC COMPANY
FLETCHER'S PAINT WORKS AND STORAGE FACILITY SUPERFUND SITE
MILFORD, NEW HAMPSHIRE
FINAL (100%) DESIGN REPORT

SPTC DETAILS
DEWATERING SYSTEM REQUIREMENTS - MILL STREET AREA

HALEY & ALDRICH Project No. 32608-003
Date NOVEMBER 2012
HALEY & ALDRICH, Inc.
465 Medford Street
Boston, MA 02129
617.886.7400

DW-7

Appendix C

Technical Specifications

SECTION 00580 – SUBMITTALS

PART 1 - GENERAL

1.01 WORK SPECIFIED

A. Submittal Procedures.

B. Approval Time of Submittals.

C. Survey / Layout Data.

D. Shop Drawings.

E. Close-Out Submittals.

1.02 RELATED DOCUMENTS

A. Section 01770 – Contract Close-Out Procedures.

1.03 SUBMITTALS

A. Submittal schedule.

1.04 SUBMITTAL PROCEDURES

A. All Submittals regardless of origin shall be submitted through the Engineer in accordance with this Section. The appropriate address and receiver of submittals will be designated at the preconstruction conference to be held following the Notice to Proceed.

B. Submittals shall be in a format that is compatible with Expedition Project Management software. A transmittal letter shall accompany all submittals. The transmittal letter shall indicate:

- Purpose of submittal, date, and submittal number;
- Section and paragraph that item complies with;
- Type of submittal (Manufacturer's Data, Shop Drawing, Sample, Record Drawing, etc.);
- Desired return date of submittal;
- Name and telephone number of the person to whom any questions can be directed; and
- Any deviations from the Contract Documents.

C. All submittals regardless of origin shall be stamped with the approval of Contractor and identified with the Project name and number, Contractor's name, and references to applicable Sections, Drawings, and the Contractor submittal number. When catalog pages are submitted, applicable items shall be clearly identified in a way that is reproducible using a copier or scanner. The current

revision, issue number, and data shall be indicated on all Drawings and other descriptive data.

D. Submittals shall be consecutively numbered in direct sequence of submittal and without division by subcontracts or trades. The submittal number should appear within or next to the Contractor stamp. Resubmittals shall bear the number of the first submittal followed by a letter (e.g., A, B,) to indicate the sequence of the resubmittal.

E. Multiple submittals shall be sufficiently separated and bundled such that the end of one submittal and the start of another is clearly discernable. Staples, rubber bands, paper clips, or tab dividers are acceptable.

F. Six (6) copies and one electronic copy of each submittal and necessary data shall be submitted to Engineer. Submittal drawings shall use the latest version of AutoCAD by Autodesk, Inc. Engineer will not accept submittals from anyone but the Contractor.

G. Contractor's stamp of approval is representation to Engineer that Contractor accepts full responsibility for determining and verifying all quantities, dimensions, field construction criteria, materials, catalog numbers, and similar data, and that he has reviewed or coordinated each submittal with the requirements of the work and the Contract Documents.

H. All deviations from the Contract Documents shall be identified on each submittal and shall be tabulated in Contractor's letter of transmittal. Such submittals shall, as pertinent to the deviation, indicate essential details of all changes proposed by Contractor (including modifications to other facilities that may be a result of the deviation).

I. Contractor shall accept full responsibility for the completeness of each submission, and, in the case of a resubmission, shall verify that all exceptions previously noted by Engineer have been taken into account.

J. When the Drawings and data are returned marked **"REJECTED" OR** "**RESUBMIT,"** the corrections shall be made as noted thereon and as instructed by Engineer and (6) corrected copies resubmitted.

K. When corrected copies are resubmitted, Contractor shall in writing direct specific attention to all revisions and shall list separately any revisions made other than those called for by Engineer on previous submissions.

L. Resubmittals shall be made within 10 days of the date of the letter returning the material to be modified or corrected, unless within 5 days Contractor submits an acceptable request for an extension of the stipulated time period, listing the reasons the resubmittal cannot be completed within that time.

SECTION 00580 – SUBMITTALS

M. Contractor's letter of transmittal for resubmissions shall list the date of the original submittal letter, the date of Engineer's letter returning the submittal, and the dates of submission and return of any previous resubmittals.

N. When the Drawings and data are returned marked **"REVIEWED"** or **"REVIEWED AND NOTED,"** no additional copies need be furnished.

1.05 APROVAL TIME OF SUBMITTALS

A. Engineer shall review and return submittals to the Contractor within fourteen (14) days of the stamped received date unless regulatory agency approval is required.

B. Engineer shall make a reasonable effort to return submittals to the Contractor within 30 days of the stamped received date when regulatory agency approval is required.

C. Contractor recognizes that GE has no authority over the length of time regulatory agencies may require to review submittals. Delays caused by regulatory agencies shall be grounds for extension of schedule but shall not be grounds for additional compensation. Contractor shall incorporate expected lead times of materials and equipment, and anticipated submittal review time into Contractor's construction schedule. Contractor shall anticipate the possibility of delays in lead times and submittal approvals and plan to get submittals in and approved well in advance of drop dead order dates. Contractor will demonstrate advance planning by showing float time for submittal approvals where ever possible in the baseline schedule.

1.06 SURVEY/LAYOUT DATA

A. When required by the Contract Documents, Contractor shall submit survey/layout data in accordance with submittal procedures. Whenever possible, Contractor survey/layout data will be overlain on design layout or baseline drawings for comparison. Survey/Layout data shall be submitted in the same format as shop drawings.

B. All field books, notes, quantity take-offs, and other data developed by Contractor in performing surveys required as part of the Work shall be available to Engineer for examination throughout the construction period. All such data shall be submitted to Engineer with the other documentation required for final acceptance of the Work, as per specific requirements in Section 01770 – Contract Close-Out Procedures.

1.07 SHOP DRAWINGS

A. Submit six (6) sets of complete detailed shop drawings for acceptance of all materials, equipment, accessories, and appurtenances specified herein or shown

on the construction Drawings prior to the fabrication, installation, or incorporation of the specified materials, equipment, or accessories into the Work. Submit all shop drawings in accordance with the submittal procedures and the requirements of the General Conditions of the Contract.

B. Shop Drawings are generally defined as all Drawings, diagrams, illustrations, brochures, schedules, and other data which are prepared by Contractor, a subcontractor, manufacturer, fabricator, supplier, or distributor, which illustrate how specific portions of the Work shall be fabricated or installed.

C. All shop drawings shall be in conformity with the construction drawings and technical Specifications. All shop drawings shall be made to scale, shall be accurate and distinct, and shall give all dimensions required for the fabrication, installation, and incorporation of the specified items in the Work. Whenever the location of any of the materials, equipment, accessories, and appurtenances is not shown on the construction Drawings, Contractor shall furnish prints of shop drawings for the purpose of giving the exact location in plan and in elevation of the said materials, equipment, accessories, and appurtenances. Shop drawings of mechanical equipment shall also show outline and section views, complete details, the kind of materials to be used, electrical diagrams, the kind of machine work and finish to be applied, and indicated conformity to specified requirements.

1.10 CLOSE-OUT SUBMITTALS

A. Submit close-out documentation in accordance with close-out procedures in Section 01770 – Contract Close-Out Procedures.

1.11 SUBMITTAL TABLE

A. The Contractor shall submit a Submittal Schedule to the Engineer for review within 14 days of Notice of Award, indicating the submittals and submittal dates. Unless otherwise indicated in the Contract Documents, all submittals should have submittal dates and be submitted within 90 days of the Notice to Proceed.

PART 2 - PRODUCTS

NOT USED

PART 3 - EXECUTION

NOT USED

- END OF SECTION -

SECTION 01140 – WORK RESTRICTIONS

PART 1 – GENERAL

1.01 WORK SPECIFIED

Work restrictions shall address the following:

A. Allowable Work Days / Hours.

B. Access and Containment.

C. Public Roads.

D. Work Limits.

1.02 RELATED DOCUMENTS

A. Section 01410 Town and Railroad Requirements.

1.03 ALLOWABLE WORK DAYS / HOURS

A. Normal working hours are between 7:00 a.m. to 5:00 p.m. Monday through Friday. If it shall become necessary for the Contractor to modify working hours following the start of the Work, the Owner's Representative shall be informed in writing at least 48 hours in advance of the beginning of performances of such Work. Such changes will begin only after the Owner's Representative's approval.

B. When Work is scheduled to be performed beyond normal hours, a second shift, at night, or during weekends, the Contractor shall obtain prior written approval from the Owner's Representative. It is the Contractor's responsibility to adhere to any local and state noise laws or ordinances that may govern or restrict the performance of the Work. Adequate lighting and all other necessary facilities for carrying out and inspecting the Work shall be provided and maintained by each Contractor in all areas where such Work is being performed.

1.04 ACCESS AND CONTAINMENT

A. Contractor shall provide traffic controls to comply with posted speed limits on access roads and in work zones. Construction trucks accessing the site are required to use established truck routes.

B. Personally owned vehicles shall be allowed on the Work Site in designated employee parking areas only as directed by the Owner's Representative. Contractor is responsible for transport of personnel to designated Work areas within the Site, if required.

SECTION 01140 – WORK RESTRICTIONS

C. Confine vehicle and equipment fueling, maintenance, and awaiting maintenance operations to areas designated by the Owner's Representative. Provide these designated areas with measures that prevent contamination of stormwater runoff in accordance with the Stormwater Pollution Prevention Plan (SWPPP). Measures may include, but are not limited to, covered or roofed areas, drip pans, using spill and overflow equipment, berming, cleaning pavement surfaces to remove oil and grease from leaks, or draining all parts of fluids. Vehicles and other construction equipment shall be decontaminated in the approved decontamination areas in accordance with Contract Drawings and Section 01750 – Decontamination and Wipe Sampling of Equipment.

D. Contractor and Contractor personnel vehicles are not permitted to cross the onsite railroad tracks unless an approved flagman is present.

1.05 PUBLIC ROADS

A. The use and protection of all public roadways involved in this Contract shall be in accordance with all applicable state, county, and local requirements. All transportation of equipment and materials along public roadways shall be preceded by the application and issuance of all necessary road and bridge crossing permits from the appropriate city/town/county if not already covered under permits. The Contractor shall be responsible for all required permits and associated fees. Damages to existing roadways or bridges shall be repaired by the Contractor, to its original condition or better, at no additional cost to the Owner.

1.06 WORK LIMITS

A. Working limits where applicable have been depicted on the Contract Drawings. Contractor shall restrict all work activities, including, but not limited to, storage of materials to be incorporated in the project, as well as parking of vehicles, heavy equipment, project trailers, etc., to the working limits designated on the Contract Drawings. However, where appropriate and in accordance with appropriate Specifications and approvals the Contractor may provide off-site storage of construction materials or equipment as necessary.

B. Do not transport contaminated materials or equipment that has not been decontaminated outside of limits of specified work.

PART 2 – PRODUCTS

NOT USED

PART 3 – EXECUTION

NOT USED

- END OF SECTION -

SECTION 01160 – SURVEY CONTROL

PART 1 – GENERAL

1.01 WORK SPECIFIED

A. General requirements for the layout of work and survey procedures.

1.02 REFERENCES

A. Section 01720 – Preparation.

1.03 LAYOUT AND SURVEY

A. Site survey control is provided as an attachment to this Section. The Contractor shall safeguard all survey points and bench marks. Should any of these points be destroyed, the replacement cost shall be borne by the Contractor. The Contractor shall assume the entire expense of rectifying work improperly constructed due to failure to maintain and protect such established survey points and bench marks.

B. The Contractor shall be responsible for the layout of all survey controls, grid coordinate locations, lines, grades, and elevations necessary for the proper construction, testing, and sampling of the work. Survey activities shall include, but not be limited to: establishing the limits of work, verifying excavation depths and horizontal limits through performance of pre- and post- excavation surveys, recording confirmation sampling locations, ensuring specified layer thicknesses are used during backfilling activities, recording location of utilities and utility corridors installed during backfilling activities, and development of complete as-built drawings.

C. For verifying excavation depths a survey point grid spacing of 10 feet or less is required.

D. Vertical survey tolerance to be maintained during construction is 0.05 feet unless otherwise specified or approved by the Engineer.

E. The Contractor shall employ a New Hampshire State licensed surveyor to provide the surveying functions necessary for the proper construction and documentation of the work.

PART 2 – PRODUCTS

NOT USED

PART 3 – EXECUTION

NOT USED

- END OF SECTION -

SECTION 01180 – PROJECT UTILITY SOURCES

PART 1 – GENERAL

1.01 WORK SPECIFIED

A. This Section addresses utility services to be negotiated by the Contractor and utility provider to be supplied by the appropriate utility company during performance of the Work.

B. The Contractor shall provide the appropriate connections and installations as deemed necessary by the utility company, including tie-in to existing utilities and all associated costs for each tie-in.

1.02 UTILITY IDENTIFICATION

A. The Contractor shall identify and negotiate the appropriate utilities to be provided to the site during performance and execution of the Work as specified in the Contract Documents.

1.03 UTILITY CONNECTIONS AND RESPONSIBILITIES

A. Contractor shall identify connection points and coordinate with utility providers for installation of utilities, including tie-in to existing utilities and all associated costs for each tie-in.

B. Utility work shall adhere to state and local utility codes and requirements. Contractor shall coordinate with utility source for tie-in requirement.

C. Contractor shall protect installed utilities from damage and shall be responsible for all replacement and lost production costs associated with damaged utilities.

1.04 UTILITIES FOR CONSTRUCTION

A. Water: Provide all necessary and required water during construction, including decontamination. If necessary, provide and lay water lines to the place of use; secure all necessary permits; pay for all taps to water mains and hydrants, and for all water used at the established rates.

B. Light and Power: Provide temporary lighting and power facilities required for the proper construction and inspection of the Work. Maintain temporary lighting and power until the Work is accepted. If necessary, provide and lay electrical lines to the place of use; secure all necessary permits. Power must be provided to meet the requirements for field office trailers as specified in Section 01901 – Field Office Trailer as well as the water treatment system as specified in Section 13602 – Temporary Water Treatment System.

C. Heat: Provide temporary heat, whenever required, for work being performed during cold weather to prevent freezing of concrete, water pipes and other damage to the work or existing facilities.

SECTION 01180 – PROJECT UTILITY SOURCES

D. Sanitary Facilities: Provide sufficient on-site sanitary facilities for construction personnel.

E. Communications: Provide communication lines for telephone and internet access. All cables laid on ground shall be encased in conduit.

F. Contractor to submit a temporary utility plan for approval by the Engineer depicting and including, but not limited to, temporary utility routes, materials, size, and protection.

PART 2 – PRODUCTS

NOT USED

PART 3 – EXECUTION

NOT USED

- END OF SECTION -

SECTION 01350 – HEALTH AND SAFETY PLAN

PART 1 – GENERAL

1.01 WORK SPECIFIED

A. Work under this Section includes minimum requirements for preparation of a Contractor site-specific Health and Safety Plan (HASP).

1.02 REFERENCES

A. *Standard Operating Safety Guides*, EPA (Publication 9285.1-03, June 1992).

B. *Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities*, NIOSH, OSHA, USCG, EPA (86-116, October 1985).

C. 40 CFR 761, TSCA (1999)

D. 40 CFR 260 – 267, RCRA (1986)

E. 40 CFR 268, RCRA (1986)

F. *Title 29 of the Code of Federal Regulations*, Park 1910.

G. *Title 29 of the Code of Federal Regulations*, Park 1926.

H. *Pocket Guide to Chemical Hazards*, DHHA, PHS, CDC, NIOSH, (2005).

I. *Threshold Limit Values*, ACGIH (2006).

J. *Guide to Occupational Exposure Values*, ACGIH, (2006).

K. *Quick Selection Guide to Chemical Protective Clothing*, Forsberg, K. and S.Z. Mansdorf, 2nd Ed., (1993).

PART 2 – PRODUCTS

NOT USED

PART 3 – EXECUTION

3.01 HEALTH AND SAFETY PLAN

A. HASP Submittal: The Contractor shall prepare, submit, and implement a site-specific HASP that, at a minimum, meets the requirements of 29 CFR 1910 and 29 CFR 1926 (which includes 29 CFR 1926.65) and the minimum requirements of GE's Site-Specific HASP. The Contractor's HASP shall cover all personnel who will be employed by the Contractor to perform remedial work at the site, including direct employees as well as subcontractors. If the Contractor chooses not to include subcontractors under its HASP, then the Contractor must require each subcontractor to develop and implement a HASP that meets the requirements outlined herein. The Contractor will be responsible for

ensuring that each of its subcontractors has an adequate HASP prior to commencing any on-site work by each subcontractor; the Contractor will also be responsible to verify that each subcontractor adheres to the applicable HASP during the work activities. If a subcontractor agrees to be included under the Contractor's HASP, then a statement to this effect shall be submitted to GE. The Contractor's HASP shall include a list of the subcontractors that are covered by it.

1. The areas and materials subject to site activities may contain constituents including, but not limited to, PCBs. The results of prior investigation activities related to the Contract are available for review by the prospective Contractors. It is the Contractor's responsibility to understand and incorporate the information obtained from prior site activities in the preparation and development of a HASP. It is also the Contractor's responsibility to provide this information to its subcontractors to enable them to prepare their HASPs.

2. For work required by site activities involving the potential for personnel contact or exposure to PCBs and other regulated constituents potentially present in the site soils, the Contractor must comply with 29 CFR 1910, 29 CFR 1926, 40 CFR 260-267, and related regulations that call for the development and implementation of a safety and health program for employees involved in hazardous waste operations. The Contractor and its subcontractors will be required to comply with all applicable requirements specified under these regulations for this project.

3. Prior to commencement of site activities, the Contractor must certify that personnel employed at the site, who are directly involved with removal measures, including employees and subcontractors, have completed a 40-hour hazardous waste site health and safety training course (and annual refresher training) in accordance with 29 CFR 1910.120 and 29 CFR 1926.65. The Contractor must also certify that any individuals who later became employed by the Contractor also receive such training prior to performing work at the site.

4. Prior to commencement of site activities, the Contractor must certify that the personnel employed at the site who supervise removal activities have completed the eight-hour Site Supervisor training in accordance with 29 CFR 1910.120. The Contractor must also certify that any individuals who later function in a supervisory role will also receive such training prior to supervising work at the site.

5. The Contractor must certify that all personnel who will be employed by the Contractor to perform work at the site, including direct employees as well as subcontractors, have received the initial and annual (if applicable) medical examinations and are enrolled in an on-going medical surveillance program as required by 29 CFR 1910 and 29 CFR 1926.

6. The Contractor must also comply with the Department of Labor Safety and Health Regulations for construction promulgated under the Occupational Safety and Health Act of 1970 (PL 91-596) and under Section 107 of the Contract Work Hours and Safety Standards Act (PL 91-54).

7. The Contractor shall be responsible for the safety of its employees, subcontractors, suppliers, and other parties at the work area as a result of the Contractor's direction.

8. Buried Containers - In the event drums, containers, or other vessels are encountered, the Contractor shall terminate activities and notify GE.

B. HASP Requirements: The Contractor must prepare, submit, and implement a HASP in accordance with 40 CFR 1910.120 and 29 CFR 1926.65. The plan must address, but not be limited to, the following components:

1. Identification of Key Personnel - Identify, by name and by title, the on-site and off-site health and safety personnel responsible for the implementation of health and safety procedures. All on-site personnel involved in the measures must have OSHA 40-hour Hazardous Waste Training (29 CFR 1910.120 and 1926.65) and the corresponding 8-hour refresher course update. Copies of OSHA 40-hour Hazardous Waste Training certificates and/or 8-hour refresher course certificates for all on-site personnel (including subcontractors) shall be submitted with the contractor’s HASP.

2. Training - Describe and provide certification of all supervisory and on-site personnel having received appropriate health and safety training. Training requirements shall also include attending an initial site orientation prior to engaging in any on-site activities. Sign-off sheets acknowledging attendance shall be provided.

3. Medical Surveillance - Certify that all supervisory and on-site personnel have received appropriate medical examinations and are able to conduct the tasks required for this project including, but not limited to, working with chemicals, using respiratory protection, using personal protective equipment and conducting hazardous waste operations in accordance with 29 CFR 1910.120 and 1926.65.

4. Task-Specific Hazard/Risk Analysis - Identify all foreseeable biological, chemical, and physical hazards associated with the work, including, but not limited to, hazards associated with exposure to constituents of concern, heavy equipment operation, site conditions, weather, biological hazards, materials handling, and work around excavated areas. Develop exposure controls to mitigate each of the identified hazards to an acceptable and compliant level.

5. Work Zones - Provide a site plan, which depicts the designation of zones including: (1) Exclusion Zones (2) Decontamination Zones, and (3) Support Zones. The routes of egress and level of personal protection for each zone must be included.

6. Personal Safety Equipment and Protective Clothing - Identify personal safety equipment and protective clothing to be used and to be available on-site. This shall include identification of expected levels of protection (USEPA Protection Levels A, B, C, D) for each task, and the action levels for personal protective equipment upgrades. A respiratory protection program that meets the requirements of 29 CFR 1910.134, and that establishes specific requirements for any respirator use shall be included.

   a. Minimum initial levels of protection for personnel performing any work associated with excavation, processing, or handling PCB-impacted materials shall utilize modified Level D Personal Protective Equipment (PPE). Level D PPE shall at a minimum consist of ANSI Z87.1 safety glasses with permanent side shields, hard hat, ANSI-approved footwear for impact protection (i.e., steel-toe), PCB-resistant work gloves and where appropriate Tyvek coveralls.

   b. Minimum initial levels of protection for activities with the potential of PCB-impacted materials to soak through a standard Tyvek coverall or material that presents a splash hazard (such as during decontamination of equipment and maintenance on equipment that has not been decontaminated) is modified Level D PPE, to include polycoated Tyvek coveralls (or equivalent) and face shield or goggles. Interaction between activities has not been considered. These considerations shall be addressed by the Contractor in the site-specific Contractor HASP.

7. Air Monitoring - Identify protocols and criteria associated with area and personal air monitoring during on-site activities. The Contractor shall conduct real-time monitoring of vapors and particulates during excavation activities in accordance with the site-specific HASP. The Contractor shall also conduct personal exposure monitoring for vapors and particulates as necessary to demonstrate compliance with applicable exposure regulations and guidelines.

8. Personnel Decontamination - Describe methods and procedures to be used for personnel decontamination, including decontamination materials, procedures, and the level of personal protection needed for personnel conducting decon activities.

9. Equipment Decontamination – Describe the methods and procedures to be used for vehicle and equipment decontamination.

10. Confined Space Entry – Describe procedures for confined space entry in accordance with OSHA's Confined Space Standard.

11. Material Safety Data Sheets - Provide Material Safety Data Sheets (MSDSs) for all materials to be brought on site, as well as constituents that are expected to be encountered in the course of the construction activities.

12. Construction Safety Procedures (OSHA 1926.1 - 1926.652, Subpart A-P) to address excavation and trenching methods and safety procedures, as well as a

daily site safety inspection procedures and a checklist to evaluate the safety of these operations..

13. Standard Operating Procedures and Safety Programs as required by applicable sections of 29 CFR 1910 and 1926.

14. Emergency Procedures – The Contractor must prepare, submit, and implement a Contingency Plan that includes, at a minimum, the following items:

- A spill prevention control and countermeasures plan for all materials brought to the work site;
- Emergency vehicular access/egress;
- Evacuation procedures of personnel from the work site;
- A flood control contingency plan to identify measures to protect the work site and adjacent waterway from impacts in the event of high water and/or flood conditions;
- A list of all contact personnel with phone numbers and procedures for notifying each, including: GE; GE's Representative; the Contractor; the local fire official(s); ambulance service; local, county, and State Police; and local hospitals; Routes to local hospitals;
- Procedures to be implemented in response to the potential discovery of buried drums, capacitors, or other vessels during the response actions, including:

    1. Immediate notification of any such discovery to GE/GE's Representative (who will then notify the appropriate Agencies);
    2. Segregation and overpacking of any liquid-containing drums, capacitors, or other vessels, as well as any potentially contaminated non-liquid-containing drums; and
    3. Coordination with T&D Contractor and GE's Representative for the characterization and off-site disposal of segregated drums, capacitors, or other removed vessels; and

- Identification of responsible personnel who will be in a position at all times to receive incoming phone calls and to dispatch Contractor personnel and equipment in the event of an emergency situation. The telephone number(s) must be supplied to GE not less than seven days prior to the commencement of work.

SECTION 01350 – HEALTH AND SAFETY PLAN

C. Execution: The HASP, and all subcontractor HASPs, shall be submitted to GE for record- keeping purposes (a formal review of the plan and approval will be performed) within 21 days of contract award. Determination of the appropriate level of worker safety equipment, procedures, or modification to equipment and procedures based on site conditions must be made by the Contractor as a result of site visit(s), review of available information, and anticipated site activities.

1. Should the Contractor identify any unforeseen or site-specific safety-related factor, hazard, or condition, or if one should become evident during the performance of work at the site, it will be the Contractor's responsibility to bring such to the attention of GE both verbally and in writing as quickly as possible for resolution. In the interim, the Contractor should take prudent action to establish and maintain safe working conditions and to safeguard employees, the public, and the environment. The Contractor shall revise its HASP and cause subcontractor HASPs to be revised, as necessary based upon the changing conditions at the site.

2. Should the Contractor seek relief from, or substitution for, any portion or provision of the HASP, such relief or substitution must be requested of GE in writing, and if approved, be authorized in writing.

3. Any disregard for the provisions of these Health and Safety requirements will be deemed just and sufficient cause for termination of the Contract without compromise.

- END OF SECTION -

SECTION 01355 – HAZARDOUS MATERIALS CONTROL

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Control of PCB-Contaminated Sediment.

B. Control of other Hazardous Materials.

C. Spill Prevention, Control, and Countermeasures.

1.02 RELATED DOCUMENTS

A. TSCA - 40 CFR 761.

B. Spill Prevention Control and Countermeasure - 40 CFR 264.193.

1.03 SUBMITTALS

A. Contaminant Prevention Plan

B. Pesticide Treatment Plan

C. Spill Prevention, Control and Countermeasure (SPCC) Plan

PART 2 - PRODUCTS

NOT USED

PART 3 - EXECUTION

3.01 CONTROL OF PCB-CONTAMINATED MATERIAL

The Technical Specifications define work requirements for control of PCB-containing material. Requirements include training, monitoring, specific safe work practices, decontamination, and documentation. The contractor, is required to follow the specified practices when there is a potential exposure to PCBs.

3.02 CONTROL OF OTHER HAZARDOUS MATERIALS

A. Pollution Prevention

Contractor shall submit a Contaminant Prevention Plan that: identifies potentially hazardous substances to be used on the job site; identifies the intended actions to prevent introduction of such materials into the air, water, or ground; and details provisions for compliance with federal, state, and local laws and regulations for storage and handling of these materials. A copy of the Material Safety Data Sheets (MSDS) and the maximum quantity of each hazardous material to be on

site at any given time shall be included in the Contaminant Prevention Plan. As new hazardous materials are brought on site or removed from the Site, the plan shall be updated.

The Contractor shall monitor construction activities to prevent pollution of the Souhegan River, other surface waters and groundwater. Toxic or hazardous chemicals shall not be applied to soil or vegetation unless otherwise indicated. All water areas affected by construction activities shall be monitored by the Contractor. For construction activities immediately adjacent to the Souhegan River, the Contractor shall be capable of quantifying sediment or pollutant loading to that surface water per substantive State or Federal Clean Water Act requirements. Contractor shall comply with requirements in the Technical Specifications.

B. Dust Control

Dust particles; aerosols and gaseous by-products from construction activities; and processing and preparation of materials; shall be controlled at all times, including weekends, holidays, and hours when Work is not in progress. The Contractor shall maintain excavations, stockpiles, haul roads, permanent and temporary access roads, spoil areas, borrow areas, and other Work areas within or outside the project boundaries free from particulates which would cause the Federal, State, and local air pollution standards to be exceeded or which would cause a hazard or a nuisance. Particulate control shall be performed as the Work proceeds and whenever a particulate nuisance or hazard occurs. The Contractor shall comply with all state and local visibility regulations. Contractor shall comply with requirements in Technical Specifications.

For water application to soil surfaces during excavation and roadway construction, the Contractor shall:

- Apply water with equipment consisting of a tank, pump with discharge gauge, hoses, and mist nozzles.

- Locate tank and spraying equipment so that the entire excavation area can be misted without interfering with excavation equipment or operations. Keep areas damp without creating nuisance conditions such as ponding.

- Apply water spray in a manner to prevent movement of spray beyond the site boundaries.

C. Pest Management

A pesticide treatment plan shall be submitted and updated, as information becomes available. The plan shall include: sequence of treatment, dates, times, locations, pesticide trade name, EPA registration numbers, authorized uses, chemical composition, formulation, original and applied concentration,

application rates of active ingredient (i.e., pounds of active ingredient applied), equipment used for application and calibration of equipment. The Contractor is responsible for federal, state, regional, and local pest management recordkeeping and reporting requirements, as well as any additional specific requirements.

Use of pesticides is subject to approval by the Engineer. In order to minimize impacts to existing fauna and flora, the Contractor shall coordinate with the Engineer at the earliest possible time prior to pesticide application. The Contractor shall discuss pest management strategies with the Engineer and receive concurrence from the Engineer prior to the application of any pesticide associated with these specifications.

Pesticides shall be delivered to the Site in the original, unopened containers bearing legible labels indicating the EPA registration number and the manufacturer's registered uses. Pesticides shall be stored according to manufacturer's instructions and under lock and key when unattended.

For the application of pesticides, the Contractor shall use the services of a subcontractor whose principal business is pest control. The subcontractor shall be licensed and certified in the state where the Work is to be performed.

The Contractor shall formulate, treat with, and dispose of pesticides and associated containers in accordance with label directions and shall use the clothing and personal protective equipment (PPE) specified on the labeling for use during all phases of the application. A MSDS shall be available for all pesticide products.

Pesticides shall be applied by a State Certified Pesticide Applicator in accordance with EPA label restrictions and recommendation. The Certified Applicator shall wear clothing and PPE as specified on the pesticide label. Water used for formulating shall only come from locations designated by the Engineer. The Contractor shall not allow the equipment to overflow. Prior to application of pesticide, all equipment shall be inspected for leaks, clogging, wear, or damage and shall be repaired prior to being used.

D. Material Transport and Disposal

Procedures for the transport and disposal of generated waste streams are specified in Specification 13810 Material Transport and Off-Site Disposal.

SECTION 01355 – HAZARDOUS MATERIALS CONTROL

E. Fuel and Lubricants

Storage, fueling, and lubrication of equipment and motor vehicles shall be conducted in a manner that affords the maximum protection against spill and evaporation. Fuel, lubricants, and oil shall be managed and stored in accordance with all federal, state, regional, and local laws and regulations. Used lubricants and used oil to be discarded shall be stored in marked corrosion-resistant containers and recycled or disposed in accordance with 40 CFR 279, state, and local laws and regulations. Storage of fuel on the Project Site shall be accordance with all federal, state, and local laws and regulations.

3.03 SPILL PREVENTION, CONTROL, AND COUNTERMEASURE

A. SPCC Plan

1. Contractor shall develop, implement, maintain, supervise, and be responsible for a comprehensive SPCC Plan. The plan shall provide contingency measures for potential spills and discharges resulting from handling of contaminated soil, and construction activities. Potential spills or discharges of particular concern during site operations are spills of fuel or other fluids from vehicles, fuel storage tanks, wastewater storage tanks, spills of contaminated sediment or debris, and discharges of water due to leaks, spills, or breakage of tanks or pipes.

B. Training

1. Project personnel shall be trained to differentiate between non-hazardous waste and potential or known hazardous waste. Project personnel shall also be trained in proper waste management activities and liquid waste storage and disposal procedures. Regular meetings shall be held with Project personnel to discuss and reinforce disposal procedures.

C. Prevention Procedures

1. Vehicle and equipment fueling shall occur only in areas designated by the Engineer; stored fuel shall be covered or enclosed; spill controls shall be implemented; and project personnel shall be trained in proper fueling procedures. Nozzles used in vehicle and equipment fueling shall have an automatic shutoff to control drips. Project personnel shall not leave fueling operations unattended and shall observe federal, state, and local requirements for any stationary aboveground storage tanks. Vehicles and equipment shall be inspected each day of use for leaks. Repairs shall be conducted immediately or leaking vehicles or equipment shall be removed immediately from the Site.

SECTION 01355 – HAZARDOUS MATERIALS CONTROL

2. Absorbent spill clean-up materials and spill kits shall be available in fueling areas and on fueling trucks, and project personnel shall dispose of spill kits properly after use. Project personnel shall use absorbent materials on small spills and shall promptly and properly dispose of removed materials. Berms and dikes shall protect fueling areas to prevent runoff and to contain incidental spills.

3. Contractor shall make arrangements with a qualified spill response contractor to be on-call and within 30 miles of the Site during project operations.

D. Spill Control and Countermeasure Procedures

1. The Contractor shall provide methods, means, and facilities required to prevent contamination resulting from spills and discharges. The Contractor shall also provide materials, equipment, and personnel to perform emergency measures which may be required if a spill or discharge does occur. Materials and equipment required onsite include a sufficient quantity of non-combustible absorbent material, shovels, 55-gallon drums, and solvent in case decontamination of structures or equipment is necessary.

2. In the event of a spill, the Contractor shall immediately notify the Engineer and emergency responders (if the situation creates a hazardous condition for workers and/or the public). Contractor's personnel shall be sufficiently trained to evaluate the apparent scale and severity of the spill so that appropriate response actions can be taken.

3. If a spill or discharge occurs, the Contractor will take immediate measures to control and contain the resulting contamination. Measures shall include isolating the contaminated area; spraying the area with foam if necessary; retrieving any discharge liquids if possible; absorbing the spilled or discharged material if a liquid; and removing, isolating, and covering contaminated sediment if necessary.

4. Decontamination procedures may be required by the Contractor to remove spillage from previously uncontaminated structures, equipment, or other material and reduce levels of the substance spilled to acceptable levels as determined by Engineer. All contaminated materials, such as wood or metal, that cannot be properly decontaminated must be properly containerized, labeled, and stored for disposal. Personnel decontamination shall include cleansing or disposing of clothing and equipment.

5. Disposal of Clean-Up Debris and Contaminated Material - All contaminated soils, absorbent materials, solvents, and other materials resulting from the clean-up of spilled or discharged substances shall be

properly stored, labeled, and disposed of at no additional cost to the Owner. Solvents should be used as a last resort after all other means of spill clean up have been exhausted.

6. After any spills, Contractor shall submit a written Spill Response Report, as well as an Engineering Evaluation Report. The Spill Response Report shall include documentation of the spill, cause of the spill, summarize the response actions taken, and record the after-the-fact engineering evaluation and proposed means of preventing recurrence. The Contractor shall submit the Report to the Engineer within 48 hours of the incident. The Contractor shall document all spills on the Record Drawings. Based on the findings and recommendations within these reports, potential follow- up steps to prevent recurrence of the spill would be discussed, agreed upon, approved, and implemented as needed. This could include increasing the number of monitoring locations or frequency of monitoring, adjusting operational conditions or procedures, or implementing engineering solutions.

- END OF SECTION -

SECTION 01410 – TOWN AND RAILROAD REQUIREMENTS

PART 1 – GENERAL

1.01 WORK SPECIFIED

A. Comply with the applicable Town of Milford and Guilford Rail System requirements referenced in these specifications. Where conflicts exist between the regulatory requirements and these specifications or the Contract Drawings advise the Engineer. The Engineer will assist in resolving the conflicts to the satisfaction of the regulatory agencies prior to commencing the Work.

1.02 RELATED DOCUMENTS

A. Infrastructure, Design, Construction and Administration Standards, Department of Public Works, Town of Milford, New Hampshire (2010)

B. Standard Regulations and Specifications for Design and Construction of Water and Sewer Infrastructure, Water and Sewer Commission, Town of Milford, New Hampshire (2007)

C. Manual for Railway Engineering, American Railway and Engineering Association (AREMA), (2000)

1.03 TOWN REQUIREMENTS

A. Comply with the following sections of the Town of Milford Infrastructure, Design, Construction and Administration Standards unless otherwise modified by these specifications and Contract Drawings or as directed by the Engineer.

1. Article I: General Construction Administration

    a. Section 1.03 Water and Sewer Regulations/Water Utilities Regulations
    b. Section 1.06 As-Builts
    c. Section 1.07 Approved Plans
    d. Section 1.010 Construction Monitoring
    e. Section 1.015 Roadway Construction
    f. Section 1.016 Preconstruction Meeting
    g. Section 1.018 Roadway Inspections

2. Article II: Roadway Construction and Trenching

    a. Section 2.02 Traffic Control
    b. Section 2.03 Clearing and Grubbing
    c. Section 2.04 Dewatering
    d. Section 2.05 Excavation Support
    e. Section 2.06 Site Preparation
    f. Section 2.07 Ledge and Boulder Excavation
    g. Section 2.08 Excavating, Backfilling and Compacting

SECTION 01410 – TOWN AND RAILROAD REQUIREMENTS

h. Section 2.09 Slope Protection and Erosion Control
i. Section 2.011 Curbing
j. Section 2.012 Bituminous Concrete Paving
k. Section 2.013 Subsurface Drainage Systems
l. Section 2.014 Storm Drains
m. Section 2.016 Restoration of Growth – Class A (Lawn)
n. Section 2.017 Restoration of Growth – Class B (Field)
o. Section 2.018 Cast-in-Place Concrete
p. Section 2.019 Precast Concrete Catch Basins
q. Section 2.021 Castings

B. Comply with the following parts of the Town of Milford Standard Regulations and Specifications for Design and Construction of Water and Sewer Infrastructure unless otherwise modified by these specifications and Contract Drawings or as directed by the Engineer.

1. Part C - Sewer Systems

a. Sanitary Sewers
b. Sanitary Manholes

2. Part D – Water System

a. Water Distribution System

1.04 RAILROAD REQUIREMENTS

A. Comply with the AREMA Manual for Railway Engineering and the Guilford Rail System typical roadbed section for track restoration at the Mill Street site unless otherwise modified by these specifications and Contract Drawings or as directed by the Engineer.

PART 2 – PRODUCTS

NOT USED

PART 3 – EXECUTION

NOT USED

- END OF SECTION -

SECTION 01450 – QUALITY CONTROL

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. This Section describes the general Quality Control requirements for control of the equipment, materials, and services supplied by the Contractor.

B. Although guidelines are established and certain minimum requirements are specified herein and elsewhere in the Contract Documents, the Contractor shall assume full responsibility for accomplishing the stated purpose. The intent of this section is to enable the Contractor to establish a necessary level of control that will:

1. Adequately provide for acceptable quality in the performance of the Work.

2. Provide sufficient information to assure both the Contractor and the Engineer that the specification requirements can be met.

3. Allow the Contractor as much latitude as possible to develop his or her own standard of control.

1.02 RELATED SECTIONS

A. Section 01460 - Remedial Action Work Plan Submittals.

1.03 SUBMITTALS

A. Prior to commencing work at any work site, Contractor shall submit a Contractor Quality Control Plan (CQCP) for approval. The CQCP shall conform to the requirements of ISO 9000 and include consideration of contract, plan, drawing and technical specification requirements.

B. The CQCP shall include, as a minimum, the following to cover all construction operations, both on site and off site, including work by Subcontractors, fabricators, suppliers, and purchasing agents:

1. A description of the quality control organization, including a chart showing lines of authority and acknowledgement that the QC staff shall implement the control system for all aspects of the work specified. The staff shall include a QC Systems Manager.

2. The name, qualifications (in resume format), duties, responsibilities, and authorities of each person assigned a QC function.

SECTION 01450 – QUALITY CONTROL

3. Procedures for scheduling, reviewing, certifying, and managing submittals, including those of subcontractors, offsite fabricators, and purchasing agents shall be in accordance with the Contract requirements.

4. A list of the definable features of Work. A definable feature of work is a task which is separate and distinct from other tasks and has separate control requirements. It could be identified by different trades or disciplines, or it could be Work by the same trade in a different environment. Although each section of the specifications may generally be considered as a definable feature of Work, there are frequently more than one definable feature under a particular section. This list will be agreed upon during the Pre-Construction Meeting.

5. Procedures for tracking preparatory, initial, and follow-up control phases, and control, verification, and acceptance tests including documentation.

6. Control, verification, and acceptance testing plan. The testing plan shall include the minimum tests and test frequencies required by each technical specification section, as well as any additional quality control tests that the Contractor deems necessary to adequately control production and/or construction processes. The testing plan can be developed in a spreadsheet fashion and shall, as a minimum, include the following:

   a. Specification item number;
   b. Item description (for example, Roadway Construction);
   c. Test type (for example, gradation, grade, compaction);
   d. Test standard (for example, ASTM or AASHTO test number, as applicable);
   e. Test frequency (for example, as required by technical specifications or minimum frequency when requirements are not stated);
   f. Responsibility (for example, plant technician); and
   g. Control requirements (for example, target, permissible deviations).

7. Procedures for tracking construction deficiencies from identification through acceptable corrective action. These procedures will establish verification that identified deficiencies have been corrected.

8. Reporting procedures, including reporting formats.

9. Procedures for Quality Assurance Audits, to be performed by Contractor Quality Assurance personnel.

10. Procedures for quality improvement.

SECTION 01450 – QUALITY CONTROL

C. The Contractor shall make all necessary amendments as instructed by Engineer and resubmit to the Engineer for acceptance. The Contractor will not be authorized to work until the CQCP and the required submittals have been reviewed and accepted by Engineer. Acceptance is conditional and will be predicated on satisfactory performance during the construction. The Engineer reserves the right to require the Contractor to make changes in the CQC Plan and operations including removal of personnel, as necessary, to obtain the quality specified. No partial payment will be made for materials subject to specific quality control requirements until the CQCP has been reviewed.

D. After acceptance of the CQCP, the Contractor shall notify the Engineer in writing of any proposed change. Proposed changes are subject to acceptance by the Engineer.

1.04 REFERENCES

A. The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

1. American Society For Testing and Materials (ASTM)

D 3740 Standard Practice for Minimum Requirements for Agencies Engaged in the Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction

E 329 Standard Specification for Agencies Engaged in the Testing and/or Inspection of Materials Used in Construction

2. International Organization For Standardization

ISO 9000 Quality Management Systems

3. American National Standards Institute

ANSI/ASQC E4-1994 Specifications and Guidelines for Quality Systems for Environmental Data Collection and Environmental Technology Program

PART 2 - PRODUCTS

NOT USED

SECTION 01450 – QUALITY CONTROL

PART 3 - EXECUTION

3.01 DESCRIPTION OF PROGRAM

A. The Contractor is responsible for quality control. The quality control system shall consist of an integrated system of management activities involving planning, implementation, documentation, assessment, reporting, and quality improvement to ensure that a process, item, or service is of the type and quality needed and expected by the client. The quality control system shall also consist of an overall system of technical activities that measures the attributes and performance of a process, item, or service against defined standards to verify that they meet the stated requirements; operational techniques and activities that are used to fulfill requirements for quality. The system shall cover all construction operations, both on and off site, and shall be keyed to the proposed construction sequence. The project superintendent will be held responsible for the quality of work on the job and is subject to removal by the Owner for non-compliance with quality requirements specified in the contract. The project superintendent in this context shall mean the individual with the responsibility for the overall management of the project including quality and production.

B. The Contractor's Quality Control Program shall provide assurance that activities affecting quality are documented within the document control system and accomplished in accordance with written instructions, Drawings, and procedures. Provisions shall be established for communicating to all responsible individuals in the Contractor's organization that Quality policies, plans and procedures are mandatory requirements which shall be implemented.

C. Activities affecting quality shall be accomplished under controlled conditions. Controlled conditions include the use of appropriate equipment; suitable environmental conditions for accomplishing the activity, such as adequate cleanliness; adequate laboratory facilities; and assurance that all prerequisites for the given activity have been satisfied.

3.02 QUALITY ORGANIZATION

A. The Contractor's Quality Control Program shall be implemented by the establishment of a separate quality control organization. An organizational chart shall be developed to show all quality control personnel and how these personnel integrate with other management/production and construction functions and personnel. The organizational chart shall identify all quality control staff by name and function, and shall indicate the total staff required to implement all elements of the Quality Control Program, including inspection and testing for each item of work. If necessary, different technicians can be utilized for specific inspection and testing functions for different items of work. If an outside organization or independent testing laboratory is used for implementation of all or part of the Quality Control Program, the personnel assigned shall be subject to the

SECTION 01450 – QUALITY CONTROL

qualification requirements below. The organizational chart shall indicate which personnel are Contractor employees and which are provided by an outside organization. All QC staff members shall be subject to acceptance by the Engineer. The quality control organization shall consist of the following minimum personnel:

B. QC Systems Manager. The QC Systems Manager shall be a full-time employee of the Contractor, or a consultant engaged by the Contractor. The QC Systems Manager shall have a minimum of 5 years of experience in related construction and shall have had prior quality control experience on a project of comparable size and scope as the contract. Additional qualifications for the QC Systems Manager shall include at least one of the following requirements:

1. Professional Engineer with 1 year of related construction experience acceptable to the Owner.

2. Engineer in training with 2 years of related construction experience acceptable to the Owner.

3. An individual with 3 years of related experience acceptable to the Engineer, with a Bachelor of Science Degree in Civil Engineering, Civil Engineering Technology, or Construction.

4. Construction materials technician certified at Level III by the National Institute for Certification in Engineering Technologies (NICET).

The QC Systems Manager shall have full authority to institute any and all actions necessary for the successful implementation of the Quality Control Program to ensure compliance with the contract plans and technical specifications. The QC Systems Manager shall report directly to a responsible officer of the construction firm. The QC Systems Manager shall be assigned to this project full time.

C. Quality Control Technicians. A sufficient number of quality control technicians necessary to adequately implement the Quality Control Program shall be provided. These personnel shall be engineers, engineering technicians, or experienced craftsman with qualifications in the appropriate field equivalent to NICET Level II or higher construction materials technician or highway construction technician and shall have a minimum of 2 years of experience in their area of expertise. The quality control technicians shall report directly to the QC Systems Manager and shall perform the following functions:

1. Inspection of all materials, construction, plant, and equipment for conformance to the technical specifications.

2. Performance of all quality control tests as required by the technical specifications. Certification at an equivalent level, by a state or nationally recognized organization will be acceptable in lieu of NICET certification.

SECTION 01450 – QUALITY CONTROL

D. Staffing Levels. The Contractor shall provide sufficient qualified quality control personnel to monitor each work activity at all times. Where material is being produced in a plant for incorporation into the work, separate plant and field technicians shall be provided at each plant and field placement location. The scheduling and coordinating of all inspection and testing must match the type and pace of work activity. The Quality Control Program shall state where different technicians will be required for different work elements.

E. The requirements for the QC organization are a QC Systems Manager and sufficient number of additional qualified personnel to ensure contract compliance. The Contractor shall provide a QC organization which shall be at the site at all times during progress of the work and with complete authority to take any action necessary to ensure compliance with the Contract.

3.03 INSPECTION

A. The Contractor shall establish a program for inspection of activities affecting quality and shall cover all construction site and laboratory operations including both onsite and offsite operations. Inspections shall be performed to verify compliance with documented instructions, drawings, procedures, and specifications as required by the Contract. Such inspections shall be performed by individuals other than those who performed the activity being inspected. All inspections shall be documented by the Contractor as specified by Section 3.05 of this Specification. Inspections shall be performed daily to ensure continuing compliance with contract requirements until completion of the particular feature of work. The CQCP shall contain a listing of all inspections required, organized by specification section.

B. The four phases of inspection for all definitive features are:

- Preparatory Inspection;
- Initial Inspection;
- Follow-up Inspection; and
- Completion Inspection

C. Preparatory Inspection

Perform preparatory inspections prior to beginning any work on any definable feature of the Work. Preparatory inspections shall include a review of Contract requirements; a check to ensure that all materials and/or equipment have been tested, submitted and approved; a check to ensure that provisions have been made to provide required testing; examination of the work area to ascertain that all preliminary work has been completed; and a physical examination of materials, equipment and samples to ensure that they conform to approved shop drawings or submittal data, that all materials and/or equipment are on hand, and all equipment is properly calibrated and in proper working condition. Notify Engineer at least 24

hours in advance of the preparatory inspection. Record preparatory inspections in the Contractor's Quality Control documentation as required below. Subsequent to the preparatory inspection and prior to commencement of work, the Contractor shall instruct each applicable worker as to the acceptance level of workmanship required in his plan in order to meet Contract specification.

D. Initial Inspection

Perform an initial inspection as soon as a representative portion of the particular feature of work has been accomplished. The initial inspection shall include an examination of the quality of workmanship; and a review of control testing for compliance with Contract requirements; use of defective or damaged materials; omissions, and dimensional requirements. Notify the Engineer at least 24 hours in advance of the initial inspection. Record initial inspections in the Construction QC documentation as required below.

E. Follow-Up Inspection

Perform follow-up inspections daily to ensure continuing compliance with Contract requirements, including control testing, until completion of the particular feature of work. Record follow-up inspections in the Construction QC documentation as required in Section 3.05. Conduct final follow-up inspections and test deficiencies corrected prior to the addition of new features of work.

F. Completion Inspection

At the completion of all work or any increment thereof established by a completion time stated elsewhere in the specifications, the QC Systems Manager or his designee shall perform a completion inspection of the Work and develop a "punchlist" of items which do not conform to the approved plans and specifications. The punchlist shall be included in the Construction QC documentation, as required by Section 3.05 and shall include the estimated date by which the deficiencies will be corrected. Perform a second completion inspection after punchlist items have been completed. Punchlist items must be completed by the contract completion date(s).

3.04 TESTS (OTHER THAN CHEMICAL SAMPLING AND ANALYSIS)

A. Procedures

When testing is required by the Contract, the Contractor shall establish a test program to ensure that all required testing is properly identified, planned, documented and performed under controlled and suitable environmental conditions, including cleanliness. Testing shall be performed in accordance with written test procedures.

SECTION 01450 – QUALITY CONTROL

Test procedures shall incorporate or reference the requirements as contained in the technical specifications, codes, standards and regulations. The Contractor shall submit the test procedures to the Engineer for review and acceptance prior to their implementation. Test procedures shall contain the following information as a minimum:

1. Test objective;

2. Reference to tests being conducted by qualified personnel trained in the proper application and use of various instruments and methods involved; and

3. Reference to use of calibrated instrumentation, appropriate and adequate test equipment, preparation conditions and items to be tested.

B. Testing

1. GE, Engineer, and EPA representatives will have the right of access to assess laboratory equipment and operations in the proposed labs for compliance with the standards set forth in the Contract technical specifications and to assess the laboratory's testing procedures and techniques.

2. The acceptability of the Contractor's proposed laboratories shall be subject to approval by the Engineer.

3. All testing and measuring equipment shall be individually identified, controlled, calibrated, and maintained at prescribed intervals, or prior to each use, and be traceable to certified equipment having known valid relationships to nationally recognized standards (i.e., National Bureau of Standards). If no national standards exist, the basis for calibration shall be documented.

4. Equipment shall be marked to indicate calibration status. Records shall be maintained which include information specific to individual equipment, date of last calibration, by whom it was calibrated and the next calibration due date.

5. Monitoring and measuring devices shall be protected from damage and deterioration during handling, maintenance and storage.

6. Monitoring and measuring devices shall be safeguarded from adjustments that could invalidate measurement results.

7. When monitoring and measuring devices are found to be out of calibration, the Contractor’s staff shall assess and document the validity of previous test results or operation history. The assessment shall determine the

appropriate action on the equipment and any product affected and records shall be maintained.

3.05 DOCUMENTATION

A. Sufficient records shall be prepared and maintained as work is performed to furnish documentary evidence of the quality of construction and laboratory analysis and of activities affecting quality. Records shall provide evidence of conformity to requirements and of the effective operation of the QC system. Records shall be consistent with applicable portions of the contract. Legible copies of these records shall be furnished to the Engineer daily.

B. The records shall include the results of review, inspections, tests, audits, monitoring of work performance, and laboratory analysis. The records shall also include, as appropriate, closely related data such as qualifications of personnel, procedures and equipment, and other documentation required by applicable parts of this Contract. Inspection and test records shall, as a minimum, identify the date of inspection or test, the inspector or data recorder, the type of observation, the results, the acceptability, and the action taken in connection with any deficiencies noted. Required records shall be legible, readily identifiable, and retrievable. The Contractor shall have a documented procedure to define controls needed for the identification, storage, protection, retrieval, retention time. and disposition of records. Legible copies of these records shall be furnished to the Engineer daily.

C. Records shall cover both complying and defective or non-complying features and shall include a statement that supplies and materials incorporated in the Work comply with the Contract. Legible copies of these records shall be furnished to the Engineer daily.

D. All records shall be available for inspection and audit, at any time, by GE.

E. The Contractor shall maintain a fire-resistant storage facility at the Elm Street Site. The facility shall contain all inspection reports, test records, raw data from continuous monitors, operating logs and material certification documents. Custody over these records will be the responsibility of the Contractor’s Project Manager. The CQCP shall include procedures for the storage of QC records prior to the time they are turned over to Engineer.

F. Specific Contractor QC records required for the Contract shall include, but are not necessarily limited to, the following records:

1. Daily Inspection Reports. Each Contractor QC technician shall maintain a daily log of all inspections performed for both Contractor and subcontractor operations on a form acceptable to the Engineer. These technician's daily reports shall provide factual evidence that continuous

SECTION 01450 – QUALITY CONTROL

QC inspections have been performed and shall, as a minimum, include the following:

a. Technical Specification item number and description;
b. Compliance with approved submittals;
c. Proper storage of materials and equipment;
d. Proper operation of all equipment;
e. Adherence to plans and technical specifications; and
f. Review of quality control tests.

The daily inspection reports shall identify inspections conducted, results of inspections, location and nature of defects found, causes for rejection, and remedial or corrective actions taken or proposed. The daily inspection reports shall be signed by the responsible QC technician and the QC Systems Manager. The Engineer shall be provided at least one copy of each daily inspection report on the work day following the day of record.

2. Daily Test Reports. The Contractor shall be responsible for establishing a system which will record all QC test results. Daily test reports shall document the following information:

a. Technical specification item number and description;
b. Test designation;
c. Location;
d. Date of test;
e. Control requirements;
f. Test results;
g. Causes for rejection;
h. Recommended remedial actions; and
i. Retests.

Test results from each day's work period shall be submitted to the Engineer prior to the start of the next day's work period. When required by the technical Specifications, the Contractor shall maintain statistical QC charts. The daily test reports shall be signed by the responsible QC technician and the QC Systems Manager.

3.06 SURVEILLANCE BY THE ENGINEER

A. All items of material and equipment shall be subject to surveillance by the Engineer at the point of production, manufacture, or shipment to determine if the Contractor, producer, manufacturer, or shipper maintains an adequate QC system in conformance with the requirements detailed herein and the applicable Technical Specifications and plans. In addition, all items of materials, equipment, and Work in place shall be subject to surveillance by the Engineer at the Site for the same purpose. Surveillance by the Engineer does not relieve the Contractor of

performing QC inspections of either "onsite or offsite" Contractor's or Subcontractor's Work either "onsite or offsite."

B. Engineer shall be provided the opportunity to witness all pre-shipment testing of equipment. A minimum of 3 weeks notice shall be provided.

C. Upon request, Contractor shall allow split or duplicate samples of any material, including PE samples and calibration standard materials, to be taken by Engineer, GE, EPA, or their authorized representatives at no additional costs.

3.07 CONTROL OF NON-CONFORMANCE

A. The CQCP shall indicate the appropriate action to be taken when a process is deemed, or believed, to be out of control (out of tolerance) and detail what action will be taken to bring the process into control. The requirements for corrective action shall include both general requirements for operation of the Quality Control Program as a whole, and for individual items of Work contained in the technical Specifications. The CQCP shall detail how the results of QC inspections and tests will be used for determining the need for corrective action and shall contain clear sets of rules to gauge when a process is out of control and the type of correction to be taken to regain process control. When applicable or required by the technical Specifications, the Contractor shall establish and utilize statistical QC charts for individual QC tests. The requirements for corrective action shall be linked to the control charts.

3.08 NON-COMPLIANCE

A. The Engineer will notify the Contractor of any noncompliance with any of the foregoing requirements. The Contractor shall, after receipt of such notice, immediately take corrective action. Any notice, when delivered by the Engineer or his designated representative to the Contractor or his/her authorized representative at the site of the Work, shall be considered sufficient notice.

B. In cases where quality control activities do not comply with either the Contractor's Quality Control Program or the contract provisions, or where the Contractor fails to properly operate and maintain an effective Quality Control Program, as determined by the Engineer, the Engineer may:

1. Order the Contractor to replace ineffective or unqualified QC personnel or subcontractors.

2. Order the Contractor to stop operations until appropriate corrective action is taken.

Engineer may issue an order stopping all or part of the Work until satisfactory corrective action has been taken. No part of the time lost due to any such stop

orders shall be made the subject of claim for extension of time or for excess costs or damages by the Contractor.

3.09 AUDITS

A. The Contractor shall establish and document an auditing system to verify the implementation of and conformance to its QC system, for the Contract. The auditing system shall be used to make a determination regarding the effectiveness of QC system.

Auditing shall be planned, performed and documented in accordance with written instructions, procedures or checklists to be included in the CQCP. The audit scope, frequency and methods shall be defined in the CQCP. Audits shall be performed by qualified and properly trained personnel who are familiar with the QC system, auditing procedures and techniques. Selection of auditors and the conduct of audits shall ensure the objectivity and impartiality of the audit process. Auditors shall not audit their own work. The auditing system shall cover all the quality-affecting activities for construction, as well as laboratories and shall be applicable to the onsite and offsite locations, including all subcontractors. The results of the audits shall be documented and reported to Engineer. All non-conformance conditions identified during the audit shall be re-audited to verify the corrective actions taken by the appropriate organization.

- END OF SECTION -

SECTION 01460 – REMEDIAL ACTION WORK PLAN SUBMITTALS

PART 1 – GENERAL

1.01 WORK SPECIFIED

A. Preparation of Remedial Action Work Plan (RA Work Plan) submittals. Submittals will be required for incorporation in the comprehensive RA Work Plans to be prepared jointly by the Contractor and Engineer and submitted to the United States Environmental Protection Agency (EPA).

B. Contractor submittals for the RA Work Plans shall be specific in content and detailed to accommodate the required Work for the Contract, as specified herein. The Engineer will be responsible for compiling and reviewing the RA Work Plan submittals.

1.02 RELATED DOCUMENTS

A. Section 01350 – Health and Safety.
B. Section 01450 – Quality Control.
C. Section 01960 – Work Schedule.

1.03 SUBMITTALS

A. Following receipt of a Notice of Award (NOA), Contractors shall be responsible to submit to Engineer the following items, in accordance with the allotted time period and target submittal date.

Within 15 calendar days from NOA, the Contractor shall submit the following:

1. Health and Safety Plan (HASP); see Section 01350.

2. Construction Schedule.

3. Construction Quality Control Plan; see Section 01450 – Quality Control, 1.03 Submittals B.1 through 5 and 7 through 10.

4. The name, location (as identified on a detailed map), and quantity of each source and type of backfill material proposed by the Contractor, along with transportation methods, schedule and routing to the facility.

5. Plans for controlling dust during construction and Stormwater Pollution Prevention Plan (SWPPP).

6. Equipment Staging Plan describing locations and management of equipment and materials proposed to be staged during construction.

7. Contingency Plan including, but not limited to, the following:

SECTION 01460 – REMEDIAL ACTION WORK PLAN SUBMITTALS

- A spill prevention control and countermeasures plan for all materials brought to the work site;
- Emergency vehicular access/egress;
- Evacuation procedures of personnel from the work site;
- A flood control contingency plan to identify measures to protect the work site and adjacent waterway from impacts in the event of high water and/or flood conditions;
- A list of all contact personnel with phone numbers and procedures for notifying each, including: GE; GE's Representative; the Contractor; the Town of Milford fire official(s); ambulance service; local, county, and State Police; and local hospitals;
- Routes to local hospitals;
- Procedures to be implemented in response to the potential discovery of buried drums, capacitors, or other vessels during the response actions, including:
  - Immediate notification of any such discovery to GE/GE's Representative (who will then notify the appropriate Agencies);
  - Segregation and overpacking of any liquid-containing drums, capacitors, or other vessels, as well as any potentially contaminated non-liquid-containing drums; and
  - Coordination with GE's T&D Contractor and GE's Representative for the characterization and off-site disposal of segregated drums, capacitors, or other removed vessels.
- Identification of responsible personnel who will be in a position at all times to receive incoming phone calls and to dispatch Contractor personnel and equipment in the event of an emergency situation. The telephone number(s) must be supplied to GE not less than seven days prior to the commencement of work.

7. Operation and Maintenance Plan describing operation and maintenance requirements for the temporary water treatment system.

8. Operations Plan – provide supporting information for all field work performed by the Contractor or any of its subcontractors as part of the Remedial Action including, but not limited to, list/schedule of equipment to be used on site; property protection procedures; the Contractor's plan for controlling vehicular and pedestrian traffic; stormwater (including

run-on and run-off), erosion, noise and dust control measures; and Contractor's approach for implementing excavation activities.

B. The RA Work Plan Submittal shall include, at a minimum, the items outlined above and describe the Contractor's procedures for adhering to requirements as specified in the Contract Documents.

PART 2 – PRODUCTS

NOT USED

PART 3 – EXECUTION

NOT USED

-END OF SECTION-

SECTION 01500 – TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.01 WORK SPECIFIED

A. This Section includes requirements for temporary utilities that may be required during facility construction (until such services are brought to the Site), including Contractor construction facilities, vehicular access and parking, temporary barriers and enclosures, and temporary controls.

B. Work under this section includes the furnishing, installation, and maintenance of two separate field office trailers: one for the exclusive use of the Engineer and the Owner, and one for the exclusive use of the United States Environmental Protection Agency (USEPA) (and other Agencies). In addition, this section shall include all operating expenses (except long distance telephone and facsimile charges) associated with the field office trailer. The Contractor shall supply its own field trailer (including an additional break trailer, if necessary) for its personnel and office-related equipment.

C. The field office trailers shall be ready for occupancy within thirty (30) days following acceptable Engineer review of the associated submittal (or 10 days prior to site mobilization) and shall be provided and maintained until final acceptance of the Work.

D. Following final acceptance of the Work, the Contractor shall remove the field office trailers from the Site.

1.02 SUBMITTALS

A. Within one (1) calendar week following award of Contract, the Contractor shall submit to the Engineer drawings showing the layout, furnishings and facilities of the field office trailers, and information concerning how the Contractor proposes to furnish the required utilities

1.03 RELATED DOCUMENTS

A. Section 01740 – Cleaning.

1.04 CONSTRUCTION FACILITIES

A. Contractor-supplied field offices shall be supplied by GE Modular Space or approved equal.

B. The field offices shall provide a minimum of 400 square feet of floor space and shall be partitioned to provide three rooms: two small rooms and one large room with adjoining doors. The smaller rooms shall be not less than 96 square feet in area, and shall each contain two windows. Two outside doors and eight windows will be the total required.

SECTION 01500 – TEMPORARY FACILITIES AND CONTROLS

C. The Contractor shall install and maintain, in accordance with all applicable codes and regulations, the electric, telephone and high speed internet services for the office trailers.

D. The field office trailers shall have the following built-in items.

1. Overhead shelves and two 2-drawer file cabinets.

2. Forced air heat.

3. One 8,000 BTU air conditioner.

4. Closet.

5. Sufficient supply of electrical outlets and a minimum two telephone outlets.

6. Cable- or DSL-ready outlets.

7. Toilet; a separately enclosed room, properly ventilated and complying with applicable sanitary codes.

E. The office trailers shall have the following movable items.

1. Four flat-top movable desks (measuring 44 inches x 30 inches) with filing and lockable storage drawers.

2. Four office chairs.

3. Two large waste baskets.

4. Two 4-drawer legal size, fire-proof, filing cabinets with locks.

5. Eight folding or stacking chairs.

6. Two tables (measuring 30 inches x 60 inches).

7. One vertical filing plan rack for two sets of 22-inch x 36-inch plans each rack.

8. One ten-pound Class ABC fire extinguisher, (Protectoseal or approved equal) Model No. 2A10SA, or approved equivalent.

9. One first aid kit (Johnson & Johnson Co., Model No. 25 or approved equal).

SECTION 01500 – TEMPORARY FACILITIES AND CONTROLS

10. One refrigerator (minimum 2.5 cubic-feet capacity).

11. Two telephones.

12. One combination printer/scanner/copier/facsimile machine (HP Office Jet 4315 or similar).

F. Maintenance of the trailers shall include adequate heating and cooling, electric, telephone and internet services, and lighting. Sanitary facilities, snow removal as required and janitorial services will be the responsibility of the Contractor not less than weekly. All garbage, dust, and miscellaneous material collected during clean-up of the facilities shall be disposed by the Contractor at a permitted sanitary landfill as deemed acceptable by the Engineer.

G. Location: Obtain prior written approval for location of field offices structures from the Engineer.

1.04 VEHICULAR ACCESS AND PARKING

A. Vehicle Access

1. Personally owned vehicles shall not be allowed on the work site except for designated employee parking areas. Contractor is responsible for transport of personnel to designated work areas, if required.

2. Keep designated access roads clear of dirt and debris resulting from the Work.

3. Provide means of removing mud from vehicle wheels before entering paved roads.

4. All means and methods for maintaining paved areas and roadways shall be approved by the Engineer

B. Vehicle Parking

1. Construction personnel shall park vehicles and construction equipment in areas where they will not impede the public. Vehicle parking in the construction area shall be in full compliance with all local and state traffic laws and all local and state permits in force on this Project.

2. Keep designated parking areas clear of dirt and debris resulting from the Work.

SECTION 01500 – TEMPORARY FACILITIES AND CONTROLS

1.05 TEMPORARY BARRIERS AND ENCLOSURES

A. Protection of Workers and Public: Effect and maintain at all times during the prosecution of the Work, barriers and lights necessary for the protection of Workers and the Public. Provide suitable barricades, lights, "danger" or "caution" or "street closed" signs and watchmen at all places where the Work causes obstruction to normal traffic, excavation sites, or constitutes in any way a hazard to the public and other Contractors or Owner and their representative(s).

B. Barricades and Lights

1. Protect all streets, roads, highways, excavations, and other public thoroughfares which are closed to traffic. Use effective barricades which display acceptable warning signs. Locate barricades at the nearest public highway or street on each side of the blocked section.

2. Statutory Requirements: Install and maintain all barricades, sign, lights, and other protective devices within highway rights-of-way in strict conformity with applicable statutory requirements by the authority having jurisdiction.

C. Temporary Enclosures: Provide temporary enclosures for protection of construction, in progress and completed, from exposure, foul weather, other construction operations, and similar activities.

1. Where heating or cooling is needed and permanent enclosure is not complete, insulate temporary enclosures.

1.06 TEMPORARY CONTROLS

A. Smoke Prevention

1. Strictly observe all air pollution control regulations.

2. No open fires are permitted.

B. Dust Control

1. Adequately protect buildings or operating facilities which may be affected adversely to dust. Protect machinery, motors, instrument panels, or similar equipment by suitable dust screens. Include proper ventilation with dust screens.

C. Temporary Drainage Provisions

1. The Contractor is to provide for the drainage of stormwater and any water applied or discharged onsite in performance of their Work.

SECTION 01500 – TEMPORARY FACILITIES AND CONTROLS

Provide adequate drainage facilities to prevent damage to the Work, the Site, and adjacent property in accordance with the Stormwater Pollution Prevention Plan (SWPPP) for the Site.

2. Maintain excavations free of water. Provide, operate, and maintain pumping equipment.

D. Erosion Control: Provide erosion control in accordance with the Contract Drawings.

E. Pollution: Prevent the pollution of drains and watercourses by sanitary wastes, sediment, debris, and other substances resulting from construction activities. Do not permit sanitary wastes to enter any drain or watercourse other than sanitary sewers. Do not permit sediment, debris, or other substances to enter sanitary sewers. Take reasonable measures to prevent such materials from entering any drain or watercourse.

PART 2 - PRODUCTS

NOT USED

PART 3 - EXECUTION

NOT USED

- END OF SECTION -

SECTION 01540 – SITE SECURITY

PART 1 – GENERAL

1.01 WORK SPECIFIED

A. Owner Security Measures.

B. Contractor Responsibilities.

C. Confidentiality / Personnel.

1.02 SUBMITTALS

A. Contractor Security Plan.

1. Within ten days following the execution of a contract or issuing a Purchase Order (PO) and a minimum of ten days prior to the commencement of construction activities, the Contractor shall submit a security plan. The plan shall include an inventory of equipment to be used and security measures to be taken by the Contractor with respect to Contractor's equipment and security responsibilities. At a minimum the plan shall include the following:

   a) Contractor procedures for securing all equipment and work areas when unattended within and outside the fenced perimeters.

   b) Security mechanisms for various equipment and work areas (fencing, locks, signage, power supply).

1.03 REFERENCES

A. Section 02711 – Galvanized Chain Link Fence

1.04 OWNER SECURITY MEASURES

A. Only personnel in the employment of the Owner or its Contractors, Subcontractors or Suppliers shall be allowed onsite. No other personnel are allowed onsite without the express written approval of Owner's Representative.

B. Only vehicles authorized by the Owner's Representative shall be allowed onsite. All others must remain in designated areas, parking areas, or offsite. Unauthorized vehicles will be towed at the expense of the vehicle owner.

1.05 CONTRACTOR RESPONSIBILITIES

A. Contractor is responsible for constructing fences, jersey barriers, gates, booths and other constructed security measures as well as providing security personnel per the requirements of the Contract documents.

SECTION 01540 – SITE SECURITY

B. Temporary, relocated and permanent fencing shall be installed in accordance with Section 02711 – Galvanized Chain Link Fence.

C. The Contractor will maintain the security program throughout construction until Owner's Representatives acceptance and occupancy precludes need for Contractor's security program.

D. Security personnel are required to be on-site during work activities. At a minimum, periodic security checks shall be conducted by security personnel during non-work hours, as needed, to provide required security.

E. Contractor personnel will report to the designated location for site orientation in advance of work. Each contractor personnel must participate in site-specific training, provide all applicable Occupational Safety and Health Administration (OSHA) and other training records, and sign the Confidentiality Agreement prior to start of Work.

F. Contractor shall be solely responsible for security of materials, property and tools and equipment, including areas that are accessible by water, from loss, theft, damage, and vandalism. All materials, tools and equipment shall be kept locked by the contractor when not in use. Contractor shall repair all damage to property of the Owner and others arising from failure to provide adequate security at no additional cost to the Owner.

G. If existing fencing or barriers are breached or removed for purposes of construction, Contractor shall provide and maintain temporary security fencing equal to the existing in a manner satisfactory to the Owner's Representative.

H. Contractor shall report any theft or vandalism to Owner's Representative. Contractor may make no claim against the Owner or adjacent property owner(s) for damage, due to Contractor negligence, resulting from trespass and shall replace/repair damage at no additional cost to the Owner. If Contractor personnel encounter trespassers, they will notify Owner's Representative and will make observations to report the identity of the trespassers.

1.06 CONFIDENTIALITY / PERSONNEL

A. Contractor and all employees of contractor shall read and sign the Confidentiality Agreement prior to working on the Project (including personnel working off site) or gaining access to and working at the Site.

- END OF SECTION -

SECTION 01710 – EXAMINATION

PART 1 – GENERAL

1.01 WORK SPECIFIED

A. Work under this Section includes requirements for examination of existing conditions and utility location, and acceptance of site conditions.

1.02 REFERENCES

A. New Hampshire Dig Safe Law RSA 374.

B. New Hampshire Code of Administrative Rules, Chapter Puc 800 and Parts Puc 801-807.

PART 2 – PRODUCTS

NOT USED

PART 3 – EXECUTION

3.01 EXAMINATION

A. Existing Conditions: The existence and location of site improvements, overhead and underground utilities, and other facilities indicated as existing are not guaranteed. Before beginning the Work, investigate and verify the existence and location of all such improvements, utilities, facilities, and other construction affecting the Work.

B. Utility Location: Strictly comply with all applicable requirements of New Hampshire Dig Safe Law RSA 374 (Underground Utility Damage Prevention System) and New Hampshire Code of Administrative Rules, Chapter Puc 800 (Underground Utility Damage Prevention Program), Parts Puc 801-807.

1. Before construction, verify the location and invert elevation at points of connection of the Work with sanitary sewer, storm sewer, water-service piping, and underground electrical and communication services and infrastructure.

2. Furnish Owner's Representative with location data for Work related to the control structures, utilities, and installed equipment that must be performed by public utilities.

C. Acceptance of Conditions: As applicable, examine substrates, grades and elevations, locations, areas, and conditions for compliance with requirements for installation tolerances and other conditions affecting performance. Record observations.

1. Written Report: Where a written report listing conditions detrimental to performance of the Work is required by the Contract Documents, include the following:

SECTION 01710 – EXAMINATION

a. Description of the Work.
b. List of detrimental conditions, including substrates.
c. List of unacceptable installation tolerances, conditions, and operability concerns.
d. Recommended corrections.

2. Examine and document existing grades, dimensions, pavements, sewer manhole or inlet structures, piping, foundations, walls, floors, and roofs for suitable conditions prior to initiation of intrusive activities.

3. Proceed with the Work only after unsatisfactory conditions have been documented or corrected and approved by the Owner's Representative.

- END OF SECTION -

SECTION 01715 - PRECONSTRUCTION CONDITION SURVEY

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

A. The Contractor shall provide all equipment, materials, labor, and services required to complete pre-construction condition surveys of the following:

1. Northern Rail Road Tracks at Mill Street for a distance of 75 ft in either directions of the closest soil removal cell.

2. Comprehensive documentation of existing conditions, including existing road surfaces, and perimeter properties of both Mill and Elm Streets.

3. Buildings and structures along Mill Street within 150 ft of any soil removal cell (interior and exterior, all floors):

B. Pre-construction condition surveys shall include but should not be limited to photo and/or video survey of interiors and exteriors of buildings and video survey of site perimeters (including road surfaces). Images shall be such that all cracks are visible with a scale in the image. Audio description of visual documentation or written description of photographic documentation shall also be provided. Contractor shall provide police details and traffic control measures where necessary to complete the work for this Section.

C. The Owner will secure permission for the Contractor to access the structures described above.

1.02 SUBMITTALS

A. The Contractor shall document a minimum of 5 years' experience in planning and executing programs of the type specified herein.

B. Submit a narrative outlining the proposed method of pre-construction surveys for the structures and existing conditions, including existing road surfaces, and perimeter properties of both Mill and Elm Streets.

C. Four copies of the pre-construction condition surveys for each existing building and area listed in Section 1.01 shall be submitted to the Owner for review at least 4 weeks prior to start of any construction work on the site.

1.03 QUALIFICATIONS

A. The Contractor shall have a minimum of 5 years experience completing the type of work specified herein.

SECTION 01715 - PRECONSTRUCTION CONDITION SURVEY

PART 2 - PRODUCTS (NOT APPLICABLE)

PART 3 - EXECUTION (NOT APPLICABLE)

END OF SECTION

SECTION 01720 – PREPARATION

PART 1 – GENERAL

1.01 WORK SPECIFIED

General procedural requirements for preparing the Site:

A. Preparation of Site prior to construction activities.

B. Construction layout.

C. Field engineering and surveying.

D. Construction surveys.

1.02 SUBMITTALS

A. Qualification Data: Evidence of State of New Hampshire licensure for Land Surveyors and Professional Engineers.

1.03 REFERENCES

A. Section 01160 – Survey Control

B. Section 01180 – Project Utility Sources

C. Section 01760 – Protection of Existing and Installed Construction

PART 2 – PRODUCTS

NOT USED

PART 3 – EXECUTION

3.01 PREPARATION OF SITE

A. Existing Utility Information: Furnish information to local utility providers and Engineer indicating necessary adjustments, movements, or relocation of existing utility structures (below, at- or above-grade), utility poles, lines, services, or other utility appurtenances located in or affected by the Work in accordance with Section 01760 – Protection of Existing and Installed Construction. Coordinate with authorities having jurisdiction.

B. Surveying: Provide survey for layout and control of the Work. Survey benchmarks, baseline, and control points are shown on the Contract Drawings and in accordance with Section 01160 – Survey Control.

SECTION 01720 – PREPARATION

C. Field Measurements: Take field measurements as required to execute the Work. Where portions of the Work are integral to other construction, verify dimensions of other construction by field measurements before beginning the Work. Coordinate schedule with construction progress to avoid delaying the Work.

D. Space Requirements: Verify space requirements and dimensions of items shown on the Drawings.

E. Review of Contract Documents and Field Conditions: Immediately on discovery of the need for clarification of the Contract Documents, submit a request for information to the Engineer. Include a detailed description of problem encountered, together with recommendations for changing the Contract Documents.

3.02 CONSTRUCTION LAYOUT

A. General: Lay out the Work using accepted surveying practices.

1. Establish benchmarks and control points to set lines and grades for the Work.

2. Check the location and elevation of every major element as the Work progresses.

3. Notify the Engineer when deviations from required lines and grades exceed allowable tolerances.

B. Record Log: Maintain a log of layout control work. Record deviations from required lines and elevations. Include beginning and ending dates and times of surveys, weather conditions, name and duty of each survey party member, and types of instruments and tapes used. Make the log available for review by the Engineer.

3.03 FIELD ENGINEERING AND SURVEYING

A. Reference Points: Locate existing permanent benchmarks, control points, and similar reference points before beginning the Work. Preserve and protect permanent benchmarks and control points during construction operations.

1. Do not change or relocate existing benchmarks or control points without prior written approval of the Engineer. Report lost or destroyed permanent benchmarks or control points promptly. Report the need to relocate permanent benchmarks or control points to the Engineer, before proceeding.

2. Replace lost or destroyed permanent benchmarks and control points promptly. Base replacements on the original survey control points.

B. Benchmarks: Establish and maintain permanent benchmarks at the Site, referenced to data established by survey control points. Comply with authorities having jurisdiction for type and size of benchmark.

SECTION 01720 – PREPARATION

1. Record benchmark locations, with horizontal and vertical data, on record drawings.

2. Where the actual location or elevation of layout points cannot be marked, provide temporary reference points sufficient to locate the Work.

3. Remove temporary reference points when no longer needed. Restore marked construction to its original condition.

C. Certified Survey: On completion of soil removal, backfill, site grading, re-installation of on-site utilities affected by the Work, major site improvements, and other Work requiring field-engineering services, prepare a certified survey showing dimensions, locations, and elevations of construction and site work. Submit with record drawings and other closeout documentation in accordance with submittal procedures.

D. Perform survey necessary to verify the Work has been performed in accordance with Contract requirements. The Engineer, at its discretion, will conduct surveys to confirm the accuracy of the Work. If the Engineers survey reveals any non-conforming Work, the cost to resurvey the Work after correction in question shall be deducted from monies due the Contractor.

- END OF SECTION -

SECTION 01733 – CONSTRUCTION WASTE MANAGEMENT

PART 1 - GENERAL

1.01 WORK SPECIFIED

A. Contractor management and disposal of wastes generated during performance of the Work.

B. Submittals for Waste Management.

1.02 SUBMITTALS

A. Prepare and submit a Waste Management Plan (WMP) to the Engineer 30 days prior to mobilization to the Site.

B. The WMP shall contain the following:

1. Analysis of the proposed job site waste to be generated by Contractor during the full construction period, including types and anticipated quantities of each. The list of construction waste materials shall include, at a minimum, the following materials:

   a. Cardboard
   b. Clean dimensional wood
   c. Excess soil
   d. Steel sheet piling
   e. Steel pipe piles
   f. Structural steel
   g. Batteries
   h. Paints, solvents, and other hazardous fluids
   i. Equipment
   j. Electric motor and transformers
   k. Wood pallets
   l. Demolition debris
   m. Fencing materials
   n. Concrete curing water
   o. Clean-up water
   p. Dewatering of groundwater
   q. Disinfection water
   r. Hydrostatic test water and
   s. Water used in flushing of lines, start-up activities, operations, and similar activities.

2. Materials Handling Procedures: Description of the means by which any waste materials identified in Section 1.02 B.1 above will be protected from contamination by excavated materials and liquids, and a description of the means to be employed in disposal or recycling the above materials. If a settling/retention pond is required, the plan shall include the design of the pond including Drawings, removal plan, and testing requirements for possible pollutants. If land application will be the method of disposal

for wastewater, the plan shall include a sketch showing the location for land application along with a description of the pretreatment methods to be implemented. If surface discharge will be the method of disposal, a copy of the discharge permit and associated documents shall be included as an attachment prior to discharging the wastewater. If disposal is to a sanitary sewer, the plan shall include documentation that the Wastewater Treatment Plant Operator has approved the flow rate, volume, and type of discharge.

3. Transportation: Describe a means of transportation of the recyclable materials (whether materials will be site-separated and self-hauled to designated centers, or whether mixed materials will be collected by a waste hauler and removed from the Site) and destination of such materials.

4. Hazardous Wastes: Explain the method of disposal for anticipated hazardous wastes or potentially hazardous wastes such as oily rags, asphalt, greases, resins, epoxies, waterproofing agents, form oil, expended 55-gallon drums, and concrete curing compounds.

5. Describe the method of recycling office materials such as clean white paper, mixed paper, toner cartridges for laser printers, copiers, and fax machines. Each item shall be recycled in accordance with the manufacturer's instructions.

6. List haulers, transfer stations and recyclers (with addresses and phone numbers) which the Contractor intends to utilize during the construction and operations period.

7. Note the coordination of product deliveries to designated prepared areas to minimize site storage time and potential damage to stored materials and the return of packing materials (e.g., wood pallets, 55-gallon drums) where economically feasible.

C. Submit to the Engineer a record of each material recycled, reused, or salvaged and each construction waste dumpster removed from the Contract Work Area on a monthly basis. The record shall include the amount of the material removed (in tons or cubic yards), the date on which it was removed, the receiving party, and the cost of transportation and disposal of the material. This record shall include copies of manifests, weight tickets, receipts, or invoices for each item disposed.

PART 2 - PRODUCTS

NOT USED

SECTION 01733 – CONSTRUCTION WASTE MANAGEMENT

PART 3 - EXECUTION

Dispose of wastes shall be as specified below, and in accordance with the other sections or as shown on the Drawings.

3.01 SOLID WASTES

A. During construction. Dispose of all waste generated by Contractor and provide for containers and offsite disposal of solid wastes. Locate containers in an area approved by the Engineer. The Contractor shall transport solid waste off site and dispose of it in compliance with federal, state, and local requirements for solid waste disposal. A Subtitle D RCRA-permitted landfill shall be the minimum acceptable offsite solid waste disposal option. The Contractor shall verify that the selected transporters and disposal facilities have the necessary permits and licenses to operate.

3.02 CHEMICALS AND CHEMICAL WASTES

A. During both construction and operation activities. Provide for containers and offsite disposal of chemicals and chemical wastes generated by Contractor. Waste storage shall be in compliance with applicable RCRA regulations and stored in an area approved by the Engineer. Chemicals shall be dispensed ensuring no spillage to the ground or water. Periodic inspections of dispensing areas to identify leakage and initiate corrective action shall be performed and documented. This documentation will be periodically reviewed by the Engineer. Chemical waste shall be collected in corrosion-resistant, compatible containers. Collection drums shall be monitored and removed to a staging or storage area when contents are within 6 inches of the top. Wastes shall be classified, managed, stored, labeled, and disposed of in accordance with federal, state, and local laws and regulations.

3.03 CONTRACTOR-GENERATED HAZARDOUS WASTES/EXCESS HAZARDOUS MATERIALS

A. During construction and operation activities, the Contractor shall provide for containers and offsite disposal of contractor-generated hazardous wastes/excess hazardous materials. Hazardous wastes are defined in 40 CFR 261, or are as defined by applicable state and local regulations. Hazardous materials are defined in 49 CFR 171 - 178. The Contractor shall, at a minimum, manage and store hazardous waste in compliance with 40 CFR 262. Waste storage shall be in compliance with RCRA regulations and in an area approved by the Engineer. The Contractor shall take sufficient measures to prevent spillage of hazardous and toxic materials during dispensing. The Contractor shall segregate hazardous waste from other materials and wastes; protect it from the weather by placing it in a safe covered location; and take precautionary measures such as providing secondary containment, berming, and other appropriate measures against accidental spillage. The Contractor shall be responsible for storage, describing, packaging, labeling, marking, and placarding of hazardous waste and hazardous

material in accordance with 49 CFR 171 - 178, state, and local laws and regulations.

B. The Contractor shall transport Contractor-generated hazardous waste off Site property in accordance with the Environmental Protection Agency and the Department of Transportation laws and regulations. The Contractor shall dispose of hazardous waste in compliance with Federal, State and local laws and regulations. Spills of hazardous or toxic materials shall be immediately reported to the Engineer. Cleanup and cleanup costs due to spills shall be the Contractor's responsibility. The disposition of Contractor generated hazardous waste and excess hazardous materials are the Contractor's responsibility.

3.04 WASTEWATER

A. Disposal of wastewater during construction shall be as specified below.

1. Wastewater from construction activities, such as onsite material processing, concrete curing, foundation and concrete clean-up, water used in concrete trucks, forms, and similar uses shall not be allowed to enter water-ways or to be discharged prior to being treated to remove pollutants. Dispose of the construction-related wastewater off site in accordance with applicable regulations.

2. For discharge of groundwater, comply with applicable regulations.

3. Water generated from the flushing of lines after testing and other start-up activities shall be disposed of in accordance with regulations.

4. Wastewater from operating activities, such as washdown water, decon water, and other sources may be disposed of by treating through the onsite wastewater treatment system with the approval of the Engineer. If approval is denied, all wastewater shall be disposed of off site in accordance with applicable regulations.

3.05 RECYCLING AND WASTE MINIMIZATION

A. The Contractor shall participate in state and local government-sponsored recycling programs. The Contractor is further encouraged to minimize solid waste and hazardous waste generation throughout the duration of the Project.

3.06 PERSONAL PROTECTIVE EQUIPMENT (PPE) DISPOSAL

A. During operations, each Contractor shall place PPE that may potentially be contaminated with PCBs into bags. PPE and bagged PPE shall not be mixed with or mingled with excavated materials.

- END OF SECTION -

SECTION 01740 – CLEANING

PART 1 - GENERAL

1.01 WORK SPECIFIED

General procedural requirements governing execution of the Work, including the following:

A. General requirements.
B. Cleaning materials.
C. Disposal of waste materials.
D. Final cleaning.

1.02 RELATED DOCUMENTS

A. Specification Section 01733 – Construction Waste Management.

1.03 GENERAL REQUIREMENTS

A. During construction, each Contractor shall collect and dispose of all debris and rubbish resulting from their Work. Debris and rubbish shall not be held more than 7 days. Cleaning shall be performed at least daily and more frequently whenever the debris and rubbish interferes with the Work under any Contract or presents a fire hazard and as noted hereinafter. The Contractor shall be responsible for consolidating all debris and rubbish resulting from their Work to one location at the Work Area.

B. The use of silica sand is prohibited in abrasive blasting operations, if required. Perform blasting operations inside an enclosure equipped with emission collection devices. For outdoor blasting of structures or items too large to be reasonably handled indoors, employ control measures such as curtailment during windy periods and enclosure of the area being blasted with tarps. In the event of visual overspray depositing outside of the immediate work area, cease blasting operations until adequate control measures are implemented.

C. Collect dust, sand, paint, or other debris resulting from abrasive blasting operations and address job specific provisions in the Remedial Action Work Plan.

D. Products proposed to be used to enhance snow and ice melting, removal, or traction shall be submitted to the Construction Manager for prior review and approval. Products defined by the Construction manager to be detrimental to an on-site process or sanitary service will not be approved.

E. Products proposed to be used to control dust shall be submitted to the Construction Manager for prior review and approval. Products defined by the Construction manager to be detrimental to an on-site process or sanitary service will not be approved.

SECTION 01740 – CLEANING

F. Contractor shall undertake every effort not to track mud or dust on any private/public roadways. Should such material inadvertently impact private/public roadways, the Contractor is solely responsible for the removal of all mud and dust that is tracked on public or private roadways throughout each workday.

1.04 CLEANING OF MATERIALS

A. Use only cleaning materials recommended by manufacturer of the surface to be cleaned.

B. Each type of cleaning material shall be used on only those surfaces recommended for it by the cleaning material manufacturer.

C. Use only cleaning materials which will not create hazards to health or property.

1.05 DISPOSAL OF WASTE MATERIALS

A. Burning or burying rubbish and waste materials on the Site is prohibited.

B. Disposal of volatile or hazardous wastes, such as mineral spirits, oil, or paint thinner, in storm or sanitary drains or on the ground is prohibited.

C. Discharge of wastes into waterways is prohibited.

1.06 FINAL CLEANING

A. At the completion of the Work, remove from the Contract Work Area all rubbish, temporary structures, construction signs, tools, scaffolding, materials, supplies, and equipment. Contractor shall broom-clean paved surfaces and rake-clean other surfaces of grounds.

B. Complete final grading, erosion control and restoration as required by the Contract Documents. Include adjacent areas disturbed by the Work.

C. Remove all debris and sediments from drains, pipes, drainage areas, ditches, stormwater system, manholes, and catch basins constructed as part of the Work.

D. Flush all drainage systems within the Contract Work Area to remove all debris and sediments from drains, pipes, manholes, catch basins, tanks, and wet wells at the completion of operations.

PART 2 - PRODUCTS

NOT USED

SECTION 01740 – CLEANING

PART 3 - EXECUTION

NOT USED

- END OF SECTION -

SECTION 01750 – DECONTAMINATION AND WIPE SAMPLING OF EQUIPMENT

PART 1 – GENERAL

1.01 WORK SPECIFIED

A. All equipment and materials used by the Contractor or subcontractors, in execution of the Work specified herein, must be decontaminated prior to relocation within the work area (if levels of impact are decreasing [e.g., from a TSCA to non-TSCA to an unimpacted area]), and prior to demobilization if used in handling of impacted materials.

1.02 SUBMITTALS

A. The Contractor shall submit proposed equipment decontamination procedures, including the proposed design and location of the equipment decontamination area, to be included as part of the Remedial Action Work Plan and in accordance with proper submittal procedures as specified in the Contract Documents.

1.03 REFERENCES

A. 40 Code of Federal Regulations (CFR) 761.79(c)(2)(i) or (ii)

PART 2 – PRODUCTS

Non-TSCA Material Removal

- Simple Green
- Spray Bottle(s)
- Rinse Water
- Scrub Brush/Scrub Pad(s)
- Clean Absorbent Pads
- Towels
- Polyethylene Sheeting

TSCA Material Removal

- Kerosene
- Spray Bottle(s)
- Rinse Water
- Scrub Brush/Scrub Pad(s)
- Clean Absorbent Pads
- Towels
- Polyethylene Sheeting

SECTION 01750 – DECONTAMINATION AND WIPE SAMPLING OF EQUIPMENT

PART 3 – EXECUTION

3.01 GENERAL

A. At a minimum, the following procedures shall be executed by the Contractor:

1. For equipment and materials to be relocated from work areas subject to soil removal activities where levels of impact are decreasing (e.g., from a TSCA to non-TSCA area to an unimpacted area), decontamination must be performed. Materials removed and collected during decontamination must be disposed in a manner consistent with materials from the area wherein the equipment was last used (i.e., TSCA versus non-TSCA).

a. Non-TSCA Material Related Decontamination

- Any equipment that has been in contact with non-TSCA PCB-containing site media will be decontaminated in a designated area.

- Cleaning equipment used for non-TSCA related activities will be as follows:

  Apply Simple Green® cleaning solution to each surface via mist, aerosol spray or cloth soaked in the cleaning solution. Control the application so that none of the cleaning solution puddles or runs to the ground. Make sure all surfaces are wetted. Use a scrub brush or scrubbing pad, if necessary, to loosen any visible dirt, stains, etc., and wipe all surfaces with clean absorbent pads to clean and dry. Rinse surfaces by applying and removing water with clean absorbent pads to clean and dry.

  The Contractor will use scrubbers and absorbent pads that are not dissolved by the cleaning solution, and that do not shred, crumble, or leave visible fragments on the surface. Scrubbers and absorbent pads used to wash contaminated surfaces must not be reused.

- Following decontamination, each piece of equipment will be observed by the Engineer prior to its departure from the site, and recleaning (if necessary) at the designated location. Any soil, sediment, etc. removed by the contractor will be disposed of in a manner consistent with the non-TSCA materials that were contacted or excavated by that equipment. Washwater or rinsewater will also be disposed in an appropriate manner.

b. TSCA Material Related Decontamination

- Any equipment that has been in contact with TSCA PCB-containing site media will be decontaminated in a designed area.

- The extent and method of cleaning equipment used for TSCA related activities will be consistent with 40 CFR 761.79(c)(2)(i) or (ii). The contractor will select and use the proper cleanup equipment to conduct the decontamination procedure correctly. Surfaces may be precleaned to remove excess soil, sediment, etc. If the solvent swab procedure is used, it will be performed (after any precleaning) as follows:

  Apply kerosene or another solvent to each surface via a mist, aerosol spray or cloth soaked in the cleaning solution. Control the application so that none of the cleaning solution puddles or runs to the ground. Make sure all surfaces are wetted. Use a scrub brush or scrubbing pad, if necessary, to loosen any visible dirt, stains, etc., and wipe all surfaces with clean absorbent pads to clean and dry. Rinse surfaces by applying and removing water with clean absorbent pads to clean and dry.

  The Contractor will use scrubbers and absorbent pads that are not dissolved by the cleaning solution, and that do not shred, crumble, or leave visible fragments on the surface. Scrubbers and absorbent pads used to wash contaminated surfaces must not be reused.

- If the double wash/double rinse procedure is used, it will be performed (after any precleaning) as follows:

  First wash. Cover the entire surface with kerosene or another appropriate solvent. Contain and collect all cleaning solutions for proper disposal. Scrub rough surfaces with a scrub brush or scrubbing pad, adding cleaning solution so the surface is continuously wet, such that each 1 square foot is washed for approximately 1 minute. Wipe smooth with a cleaning solution-soaked disposable absorbent pad such that each square foot is wiped for about 1 minute. Mop up or absorb the residual cleaning solution and suds with a clean, disposable, absorbent pad until no visible traces remain.

  First rinse. Wet the surface with kerosene or another appropriate solvent such that the entire surface is continuously wet for 1 minute. Drain and contain the solvent from the surface. Wipe the residual solvent off the drained surface using a clean, disposable, absorbent pad.

Second wash. Follow the procedure for the first wash described above. The solution from the first rinse may be used.

Second rinse. Rinse off the wash solution with clean water and capture the rinse water. Mop up the wet surface with a clean, disposable, absorbent pad until the surface is dry.

The Contractor will use scrubbers and absorbent pads that are not dissolved by the cleaning solution, and that do not shred, crumble, or leave visible fragments on the surface. Scrubbers and absorbent pads used to wash contaminated surfaces must not be reused. Scrubbers and absorbent pad used in the second rinse of contaminated surfaces may be reused to wash contaminated surfaces.

2. The Contractor may be required to perform wipe sampling of the Contractor's equipment used in direct contact with impacted materials for analysis of polychlorinated biphenyls (PCBs), as part of the pre-departure inspection. For the purposes of preparing the bid estimate, the Contractor should assume that it will be required to perform wipe sampling consisting of two wipe samples for each piece of equipment upon arrival, and a total of six wipe samples per piece of equipment to demonstrate that equipment surfaces that contacted impacted materials exhibit concentrations less than the results obtained from the equipment upon arrival.

   - If surface wipe sampling results indicate PCB concentrations less than 10 micrograms (μg) per 100 cm^2 -- a level that the United States Environmental Protection Agency (USEPA) has determined does not present an unreasonable risk of harm (see 40 CFR 761.79(b)(3)(i)(A)) -- no additional decontamination is required.

   - If a surface wipe sampling result(s) indicates PCB concentrations equal to or greater than 10 μg per 100 cm^2, the contractor must reclean the area on the equipment associated with the result(s) until an additional surface wipe sample(s) indicates PCB concentrations below 10 μg per 100 cm^2.

   All cleaning and sampling will be at the sole expense of the Contractor. No additional costs will be incurred by the Owner for downtime or while the Contractor awaits sample results.

3. All material used in equipment washing, including, but not necessarily limited to, detergent solution, rinsate, rinse water, towels, disposable equipment and polyethylene sheeting will be collected and managed consistent with applicable regulations. Use of solvent (e.g., hexane) or acid solutions will not be allowed without prior approval by the Engineer.

4. Wash water, solids, and other materials generated during equipment decontamination must not contact native materials and existing facilities and must be collected by the Contractor and placed into designated containers for introduction to the onsite temporary water treatment system.

5. Personnel engaged in decontamination activities shall utilize Personal Protective Equipment (PPE), as appropriate, and in accordance with the Contractor's Health and Safety Plan (HASP).

6. Following the completion of site remedial activities and regulatory inspections and acceptance the Contractor shall dismantle/demobilize the decontamination area including all materials associated with the decontamination area and dispose of as a TSCA waste in accordance with the Technical Specifications.

- END OF SECTION -

SECTION 01760 – PROTECTION OF EXISTING AND INSTALLED CONSTRUCTION

PART 1 – GENERAL

1.01 WORK SPECIFIED

A. This Section includes general procedural requirements governing execution of the Work by the Contractor as specified in the Contract Documents to include the following:

1. Protection, relocation and decommissioning of existing and installed construction including, but not limited to, utilities, wells, pipes, catch basins, manholes, clotheslines, planters, fences, retaining walls, carports, public drives, campers, and boats.

2. Coordination and protection of Owner installed products.

1.02 REFERENCES

A. *Final Design Report for the OSD Remedy* – Fletcher Paint Works and Storage Facility Superfund Site – Operable Unit 1 (ARCADIS , 2012)

PART 2 – PRODUCTS

2.01 QUALITY OF MATERIALS

A. All products necessary for the work as specified herein.

B. New power, utility poles and posts, and the supporting and protecting of all poles and posts shall be in accordance with the requirements of the local power and telephone companies.

C. Stakes for tree and well protection shall be 2-inch diameter steel pipe, unless otherwise shown on the Drawings or specified by the Engineer.

D. Materials required and utilized for new storm sewer and utility corridors shall be as shown on the Drawings.

PART 3 – EXECUTION

3.01 PRODUCTS INSTALLED BY OTHERS

A. Site Access: Provide access to the Site work areas in accordance with Section 01540 – Site Security.

B. Coordination: Coordinate construction and operations of the Work with other contractors and installers.

1. Pre-installation Conferences: Include construction forces of others at pre-installation conferences covering portions of the utility corridors to be installed

by others. Attend pre-installation conferences conducted by the Engineer if portions of the Work depend on Work by others.

3.02 PROTECTION OF INSTALLED CONSTRUCTION

A. The Contractor shall sustain in their places and permanently protect from direct or indirect injury any and all utilities, structures and property in the vicinity of his work, whether over or underground, or which appear within the trench or excavations, as stated herein, with the exception of those scheduled for full removal and newly furnished or replaced structures (i.e., storm sewers, catch basins, etc.) as described or shown in the Contract Documents. The Contractor shall assume all costs and expenses for direct or indirect damage which may be occasioned by injury to any of the aforementioned at no additional cost to the Owner.

B. Hand excavation shall be required within three (3) feet of buried utilities.

C. The Contractor shall protect adjacent and other property from damage including, but not limited to, residences, carport, clotheslines, trees, shrubs, water courses, culverts, fences, retaining walls and other landscape items, and shall repair and restore to the satisfaction of the Engineer any and all existing facilities, structures, equipment, surfaces, finishes or other features, as well as the decommissioning and replacement of monitoring wells in accordance with Section 02201 – Earthwork, Section 02208 – Restoration of Surfaces and all other relevant and appropriate Technical Specifications that may apply, which may become damaged or disturbed as a result of the Work or activity of the Contractor or subcontractor personnel, at no additional cost to the Owner. The Contractor shall not load nor permit any part of any existing structure to be loaded in any manner that will endanger the structure, nor shall the Contractor subject any part of adjacent properties to stresses or pressures that will endanger such.

D. The Contractor shall contact any and all responsible utility providers located in the Guilford Railroad right-of-way. The Contractor shall obtain all utility layout drawings and information (i.e., gate control lines, location fiber optic cables, etc.) and be responsible, as described in this Section, for the protections of such, as necessary.

- END OF SECTION -

SECTION 01770 – CONTRACT CLOSEOUT PROCEDURES

PART 1 – GENERAL

1.01 WORK SPECIFIED

A. This Section includes administrative and procedural requirements and items to be provided for Contract Closeout, including the following:

1. Inspection procedures.

2. Final copies and record drawings.

1.02 INSPECTION PROCEDURES

A. Substantial Completion

1. Preliminary Procedures: Prior to requesting an inspection for Substantial Completion, complete the following:

a. Prepare a list of items to be completed and corrected, the value of items on the list, reasons why the items are not complete, and the anticipated date of completion for each item. Submit list to the Engineer.

b. Complete grading, restoration, erosion control, and final cleaning requirements.

2. Inspection: On receipt of the request, the Engineer will either proceed with the inspection with the appropriate regulatory agencies or notify the Contractor of unfulfilled requirements. The Engineer will notify the Contractor of items, either on Contractor's list or additional items identified by Engineer that must be completed or corrected if applicable.

a. Re-inspection: Request re-inspection when the punchlist is completed or corrected.

b. Results of completed inspection will form the basis of requirements for Final Completion.

B. Final Acceptance

1. Inspection: Submit a written request for final inspection for acceptance. On receipt of request, Engineer will either proceed with the inspection with the appropriate regulatory agencies or notify the Contractor of unfulfilled requirements. The Engineer will prepare a Recommendation of Final Payment after inspection and acceptance by the regulatory agencies or will notify the Contractor of Work that must be completed or corrected.

SECTION 01770 – CONTRACT CLOSEOUT PROCEDURES

1.03 FINAL COPIES AND RECORD DRAWINGS

A. Upon completion of the Work and as a condition precedent to Final Payment provide all necessary record documents and drawings. Submit a draft of record drawings to the Engineer for review. Prepare final record drawings based on the Engineers comments. The material shall be submitted on one set of CD-ROM disks and one set of fill size Drawings reproduced from the CD-ROM disks. Record Drawings submitted on CD-ROM shall use the latest version of AutoCAD by Autodesk, Inc. The submittal must be approved by the Engineer. If the Contractor chooses to use a consultant to perform this Work, the choice of consultant shall be submitted to the Engineer for approval.

B. Failure to perform this Work as specified above will result in a deduction from the final payment to the Contractor. The amount of the deduction will be equal to the actual cost incurred by the Engineer to perform this Work.

PART 2 – PRODUCTS

NOT USED

PART 3 – EXECUTION

NOT USED

- END OF SECTION -

SECTION 01906 – WORK SCHEDULE

PART 1 – GENERAL

1.01 WORK SPECIFIED

A A detailed Work Schedule shall be prepared, updated, and maintained by the Contractor throughout the Project.

1.02 SUBMITTALS

A. Within ten days following the execution of a Contract or issuing of a Purchase Order (PO) and a minimum of ten days prior to the commencement of construction activities, the Contractor shall submit a Work Schedule for review.

B. The Contractor shall revise and resubmit the Work Schedule on a monthly basis and as needed in response to changed conditions.

C. In addition to the Work Schedule the Contractor shall provide a separate two week look ahead schedule on a weekly basis.

PART 2 – PRODUCTS

NOT USED

PART 3 – EXECUTION

3.01 GENERAL

A. The Work Schedule shall be, at a minimum, a neatly prepared horizontal bar graph that specifies a critical path and includes all elements of the construction activities. Additional schedule requirements are provided below.

1. Show complete sequence of construction by activity, identifying work of separate stages and other logically grouped activities, including work by subcontractors, as applicable.

2. Indicate all anticipated start and completion dates, and durations.

3. Indicate the early and late start, early and late finish, float dates, and duration.

4. Identify the first work day of each week.

5. All project costs are to be loaded into the schedule activities. Show all subcontractor costs by activity. A cash flow output report is to be provided with each schedule update. The report is to include, at a minimum, monthly cash flows for the Contractor, subcontractors, and totals.

SECTION 01906 – WORK SCHEDULE

B. Failure of the Contractor to comply with the requirements of this Section may result in work stoppage, at the Contractor's expense, until such time that the requirements of this Section are met.

C. None of the paragraphs of this Section shall relieve the Contractor of its obligation of completing the Contract in accordance with the terms and within the time limit specified in the Contract Documents.

D. The Contractor will not be allowed to initiate excavation activities until the Engineer is in receipt of a written commitment/approval letter from the primary offsite disposal facility indicating that it can handle the Contractor's proposed soil/sediment volumes over the Contractor's anticipated excavation schedule.

- END OF SECTION -

SECTION 02015 - GEOTECHNICAL INSTRUMENTATION AND MONITORING

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

A. Furnish all labor, equipment, materials, and incidentals necessary to install, maintain, monitor, and protect Geotechnical Instrumentation installed prior to this contract and that installed as part of this contract.

B. Geotechnical instrumentation to monitor the vertical deformation of existing structures/facilities adjacent to the site, including adjacent roadways railroad tracks, are to be installed and monitored by the Contractor.

C. The Contractor shall obtain additional data from the instrumentation and/or furnish, install, and monitor additional instrumentation to monitor construction performance and safety aspects of the Work as necessary at no additional cost to the Owner.

D. The Contractor shall protect, provide, and maintain safe means of access to all instrumentation locations during the duration of the project.

1.02 REFERENCE STANDARDS

A. ASTM: Specifications of the American Society for Testing and Materials.

1.03 SUBMITTALS

A. General

1. The Contractor shall forward submittals to the Engineer a minimum of 4 weeks prior to any planned work related to the Contractor’s submittals, unless otherwise noted.

2. The time period(s) for submittals are the minimum required by the Engineer to review, comment, and respond to the Contractor. The Engineer may require resubmission(s) for various reasons. The Contractor is responsible for scheduling specified submittals and re-submittals so as to prevent delays in the work.

3. The Contractor’s submittals shall be reviewed and accepted by the Engineer prior to conducting any work.

4. The Contractor shall document a minimum of 5 years’ experience in planning and executing instrumentation programs of the type specified herein.

5. Acceptance of the Contractor's submittals by the Engineer does not relieve the Contractor of the responsibility for the adequacy, safety and performance of the Work.

B. Shop drawings indicating proposed instrumentation sizes, configurations, dimensions, material types, specifications, installation procedures, locations, data reporting formats, and other data.

C. Shop drawings showing as-built locations and elevations of instrumentation installed by the Contractor. The survey shall be performed by a registered land surveyor.

D. The Contractor shall submit a Movement Mitigation Plan, and implement such plan immediately if the Limiting Values specified below are exceeded or if other excessive movements occur as judged by the Engineer. The proposed plan may include, but not be limited to, additional bracing, segmented and/or slotted excavation, temporary berms, bracing slabs, water recharging and/or other measures. The Contractor shall demonstrate that the proposed measures can be implemented immediately if required to prevent damage to site or off-site improvements.

E. Weekly movement data from all reference points. These data shall be forwarded to the Engineer within 24 hours of each survey in tabular and graphical form that is acceptable to the Engineer. Faster turnaround of data reporting and additional surveys may be required by the Engineer if Limiting Value criteria are approached (within 80 percent or greater) or exceeded.

1.04 QUALITY ASSURANCE

A. The Contractor will monitor, record, plot, and submit the instrumentation data. This work does not relieve the Contractor of the responsibility to complete the work in accordance with the contract documents.

B. The Contractor's instrumentation shall be installed under the observation of the Engineer. The Engineer will determine if the installed instruments are acceptable. The Contractor shall immediately replace, at no additional cost to the Owner, unsatisfactory instrumentation, or instrumentation that is damaged during the Project. The latter requirement applies to all instrumentation, even that which the Contractor has not installed, regardless of location, and all instrumentation damaged as a result of the Work.

C. The Contractor shall obtain additional data from the instrumentation and/or furnish, install, maintain, and monitor additional instrumentation to monitor construction performance and safety aspects of the Work as necessary at no additional cost to the Owner. The Contractor shall provide access for the Engineer to all Contractor-installed instrumentation for the purpose of supplemental readings by the Engineer.

PART 2 - MATERIALS

2.01 MONITORING POINTS

A. Monitoring points shall be furnished and installed by the Contractor. The Contractor shall submit a plan showing proposed monitoring point locations (and

elevations) for review and approval by the Engineer prior to installing the monitoring points.

B. Structure Monitoring Points (SMPs): SMPs shall be used to monitor vertical (and where indicated) lateral movements of the following structures:

1. Railroad Tracks – Install points on the existing railroad track ties at a spacing not to exceed 25 ft for a distance as shown in the Drawings. Railroad track SMPs shall consist of PK nails set in railroad ties.

2. Other Buildings – Install points on each corner of the two residential structures across Mill Street from the Mill Street site. These points shall monitor vertical movement. Building SMPs shall consist of a 1/4-in. diameter x 1-1/2-in. long stainless-steel socket head cap screw, ASTM A307 UNC thread, screwed into a 3/4 in. long x 1/2 in. diameter tamp-in screw anchor. The anchor and casing shall meet the requirements of GSA Specification FF S 325 Group 1, Type 1, Class 1. These tamp-in screw anchors shall typically be installed into vertical surfaces at each corner of the structures to be monitored.

C. Temporary Excavation Support System Monitoring Points (TESMPs)

1. TESMPs will be used to monitor vertical and lateral movement of the top of the temporary excavation support wall at a spacing not to exceed 25 ft. TESMPs shall consist of hex nut, minimum 1/4-in. diameter, welded, or bolted to the temporary excavation support wall, or other means proposed by the Contractor and approved by the Engineer.

2. If requested by the Engineer (based on performance of the temporary excavation support wall or in response to the Contractor's proposed placements of the brace level for the temporary excavation support wall), the Contractor shall install points on the interior face of the temporary excavation support wall at the excavation subgrade level and monitor vertical and lateral movements of the wall. Such installations and monitoring shall be at no additional cost to the Owner.

D. Seismographs

1. Provide two (2) new portable seismographs for monitoring the velocities of ground vibrations resulting from construction activities. Provide model SSU 2000DK as manufactured by P.R. Berger & Associates, Warrandale, PA; model Blastmate III as manufactured by Instantel Inc., Kanata (Ottawa), Ontario, Canada; model VMS-500 as manufactured by Thomas Instruments Inc., Spofford, NH; or model NC5310/D, as manufactured by Nomis Inc., Birmingham, AL, or acceptable equivalent. The seismograph shall have the following minimum features:

a. Seismic range: 0.01 to 10 in. per second with an accuracy of 5 percent and no more than a 3 db roll off at the low frequency end.

b. Flat frequency response: 2 to 200 Hertz.

c. Three component sensor.

d. Fourth channel for air blast monitoring.

e. Two power sources: Internal rechargeable battery and charger and 115 volts AC. Battery must be capable of supplying power to monitor vibrations continuously for up to 24 hours.

f. Capable of internal dynamic calibration.

g. Direct writing to printer and to 3 1/2-in. magnetic disk. Instruments provided shall be capable of producing strip chart recordings of readings on site within 1 hour of obtaining the readings. Provide computer software to perform frequency analyses of data obtained on magnetic disks.

h. Continuous monitoring mode must be capable of recording peak velocities.

2. A factory calibration shall be conducted on all seismographs at the manufacturer's facility prior to shipment. Each factory calibration shall include a calibration curve with data points clearly indicated, and a tabulation of the data. Each instrument shall be marked with a unique identification number. As a minimum requirement, the equipment shall be calibrated at least once per year, or more frequently as recommended by the manufacturer.

E. Observation wells

1. Refer to Specification Section 02140 Construction Dewatering for observation well requirements.

PART 3 - EXECUTION

3.01 GENERAL REQUIREMENTS

A. Install monitoring points along the top of temporary excavation support walls to monitor lateral and vertical movements of the wall. Install reference points at locations proposed by the Contractor and accepted by the Engineer.

B. Data collected by the Contractor shall be provided to the Engineer in both electronic and hard copy form, in a format acceptable to the Engineer, within 24 hours following the instrument readings.

SECTION 02015 - GEOTECHNICAL INSTRUMENTATION AND MONITORING

3.02 CONTRACTOR MONITORING

A. SMPs and TESMPs.

The Contractor shall notify the Engineer at least 48 hours prior to installing monitoring points.

Obtain two initial readings on the monitoring points. Obtain the first initial reading at least 72 hours prior to the start of excavation. Obtain the second initial reading approximately 24 hours prior to beginning excavation below the top of the temporary excavation support wall or surcharging adjacent to the wall, whichever occurs first.

1. Obtain readings on the monitoring points at least once per week, beginning at the start of excavation below the top of the temporary excavation support wall or surcharging adjacent to the wall, and continuing until all of the temporary bracing elements have been removed, and wall has been backfilled to finished grade.

2. The Contractor's surveys shall be accurate to 0.01 ft and shall be forwarded to the Engineer within 24 hours of the survey for review.

3. The frequency of readings shall be increased as directed by the Engineer for some or all of the reference points if the Limiting Values are approached (within 80 percent) or exceeded during the Work, or during periods of significant activity near the points. All additional readings shall be obtained at no additional cost to the Owner. Monitoring frequency may also be reduced if directed by the Engineer.

4. As-built locations and elevations shall be submitted for all replacement instrumentation required during construction.

B. Seismographs

1. The Contractor shall retain the services of an independent Vibration Monitoring Consultant (VMC), acceptable to the Engineer, to document background vibrations and monitor construction related vibrations. Prior to any vibration-producing activities, the consultant shall establish a baseline condition for vibrations which exist as a result of truck, bus and general vehicular traffic, or other sources.

   As a minimum, vibration measurements shall be taken between 8:00 a.m. and 5:30 p.m. over a 5-day period.

2. The VMC shall set-up the seismographs to monitor vibrations at the closest building or structure to the Contractors activities.

3. Monitoring during any vibration-producing construction activities such as temporary excavation support system installation or removal,

pavement breaking, and excavation shall consist of recording single-component peak particle velocities. Continuous monitoring and full waveform data shall be recorded and submitted. During all monitoring of vibration-producing construction activities, the Contractor's Vibration Monitoring Consultant shall document all events that are responsible for the measured vibration levels, and submit documentation to the Engineer with the data.

3.03 PROTECTION OF INSTRUMENTATION

A. The Contractor shall exercise caution during the progress of work to prevent damage to any instrumentation devices. Any damage or loss of function caused by the Contractor's operations, or by any other cause, to new or existing instrumentation devices installed by the Contractor or the Engineer shall be immediately repaired or the equipment replaced at no additional cost to the Owner.

3.04 LIMITING VALUES

Structure	Limiting values
Railroad Tracks	0.5 in. (vertical)
Support of Excavation System	
Soldier Pile Tremi Concrete Wall	2 in. (horizontal)
Soldier Pile Lagging	3 in. (horizontal)
Steel Sheeting	3 in. (horizontal)
Buildings along Mill Street	0.5 in. (vertical)
Seismographs	0.5 ips

END OF SECTION

SECTION 02120 – REMOVAL AND DISPOSAL OF UNDERGROUND STORAGE TANKS

PART 1 - GENERAL

1.01 DESCRIPTION

A. Work Specified

1. All labor, materials, services and equipment necessary for the removal and disposal of underground storage tank and associated appurtenances (described below) in accordance with the specifications outlined herein.

1.02 REFERENCES

A. Applicable Codes, Standards, and Specifications

1. National Fire Prevention Association (NFPA), Volume 30, "Flammable and Combustible Liquids Code".

2. National Fire Protection Association, Volume 326, "Standard for the Safeguarding Of Tanks and Containers for Entry, Cleaning, or Repair".

3. American Petroleum Institute, STD-2015, "Requirements for Safe Entry and Cleaning of Petroleum Storage Tanks".

4. American Petroleum Institute, RP-1604, "Closure of Underground Petroleum Storage Tanks".

5. American Petroleum Institute, RP-1631, “Interior Lining and Periodic Inspection of Underground Storage Tanks”.

6. National Institute for Occupational Safety and Health, NIOSH, "A Guide to Safety in Confined Spaces".

7. New Hampshire Code of Administrative Rules, Env-Wm 1401, “Underground Storage Facilities”.

8. New Hampshire Code of Administrative Rules, “Requirements for Underground and Aboveground Storage Tank Sampling and Reporting”.

9. U.S. EPA Technical Standards and Corrective Action Requirements for Owners and Operators of Underground Storage Tanks, 40 CFR 280.

B. Section 02201 - Earthwork

C. Section 13810 – Material Transport and Off-Site Disposal

SECTION 02120 – REMOVAL AND DISPOSAL OF UNDERGROUND STORAGE TANKS

1.03 SUBMITTALS

A. Written certification of proper transport and final disposal of tank, contaminated soils and any liquids or sludge found in tank shall be submitted to the Owner's Representative in accordance with the requirements of Section 13810.

B. Certificate from International Code Council for certified tank remover.

1.04 SPECIAL PROVISIONS

A. The Contractor shall notify the Owner's Representative, the New Hampshire Department of Environmental Services, and the Milford Fire Department of the proposed UST removal a minimum of thirty days in advance of the work.

B. The Owner's Representative will identify the extent of visual soil contamination and the amount of excavation.

C. The individual supervising the tank removal for the Contractor shall be certified in underground storage tank decommissioning by the International Code Council.

PART 2 - EXECUTION

2.01 TANK REMOVAL

A. Prior to removal of the tank, the Contractor shall remove all free liquid product. The contractor shall remove residual liquids and any sludge or solids from the tank and connected piping. All liquids and sludge shall be disposed of by the Contractor in a manner consistent with all applicable local, state, and federal waste disposal regulations and the requirements of Section 13810.

B. The Contractor shall disconnect piping at tank openings. All disconnected pipes and tank appurtenances shall be removed unless otherwise specified by the Owner's Representative.

C. Prior to removal from the excavation, the tank shall be rendered gas freed and then tested for flammable vapors by the Contractor in accordance with NFPA Volume 326 and all other applicable regulations.

D. The Contractor shall excavate the tank, removing soil as necessary for removal of the tank. This soil shall be stockpiled and stored in accordance with the requirements of Section 02201 – Earthwork and the Contract Drawings.

E. Excavation and dewatering shall be performed in accordance with the applicable provisions of Section 02201 - Earthwork, unless modified herein.

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SECTION 02120 – REMOVAL AND DISPOSAL OF UNDERGROUND STORAGE TANKS

2.02 EXCAVATION BACKFILL

A. Backfill shall be performed in accordance with the applicable provisions of Section 02201 - Earthwork, unless modified herein. Backfilling shall be with suitable materials as shown on the Contract Drawings.

2.03 DISPOSAL OF TANK

A. Conduct tank cleaning procedures in accordance with the requirements of American Petroleum Institute RP -1604.

B. Collect, contain and place cleaning residuals in a NHDOT approved container for transporting and disposal.

- END OF SECTION -

SECTION 02160 - LATERAL SUPPORT OF EXCAVATION

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

A. The work under this Section includes, but is not limited to, the following items including all labor, materials, equipment and services necessary for and incidental to the proper completion of temporary support of excavations, as shown on the plans and specified herein.

1. Designing (if applicable), furnishing, installing, testing, maintaining, and dismantling, as required, temporary excavation support systems as shown on the Drawings. Temporary excavation support systems shall consist of Soldier Pile and Tremie Concrete (SPTC) walls, interlocking steel sheet piling, soldier pile and lagging, and trench boxes with appropriate internal or external support (refer to S-series Drawings for limits of proposed temporary support of excavation system). Installation requirements for SPTC walls are provided in Section 02400 Soldier Pile and Tremie Concrete Wall Construction. Installation requirements for all other excavation support wall systems are presented herein.

2. Pre-trenching through the existing fill soils along the alignments of the temporary excavation support systems to remove obstructions.

3. Planning and sequencing excavation, backfilling and utility installation work related to the replacement storm sewer on Elm Street as shown on the Contract Documents.

4. Alternate temporary excavation support systems to those specified herein may be considered by the Engineer provided the Contractor can demonstrate through its submittals to the satisfaction of the Engineer that the proposed alternate system complies with the intent and criteria of these specifications.

5. Removal of the temporary excavation support systems, were applicable. If the Contractor is unable to remove the temporary excavation system it shall be cut-off a minimum of 4 ft below finished grade and an as-buit survey of the elements location performed and submitted to Owner. The SPTC wall shall be removed above El. 254.

6. Developing and implementing mitigating and remedial measures to limit movements and, where applicable, vibrations of the temporary excavation support wall, ground, adjacent buildings, railroad tracks, streets, sidewalks, utilities, and other facilities, caused by the Contractor’s construction activities. These mitigation and remedial measures shall be undertaken at no additional cost to the Owner.

1.02 DEFINITIONS AND REFERENCE STANDARDS:

A. Owner: General Electric

SECTION 02160 - LATERAL SUPPORT OF EXCAVATION

B. Contractor: Entity responsible for completing the work of this Section

C. Site Improvements: When used in the context of "protecting adjacent site improvements," shall include, but not be limited to, buildings, railroad tracks, utilities, pavements, roadways, slabs, sidewalks, curbs, foundations, and all other site improvements and features that are outside the limits of the site, or those elements within the limits of the site that are to remain

D. ASTM: Specifications of the American Society for Testing and Materials

E. AASHTO: American Association of State Highway and Transportation Officials

F. AREMA: American Railway Engineering and Maintenance-of-Way Association

G. ACI: American Concrete Institute

H. Code: Most recent edition of the New Hampshire State Building Code

I. OSHA: Occupational Safety and Health Administration

J. AISC: American Institute of Steel Construction

K. AWS: American Welding Society Codes and standards referred to in this Section are:

1. ASTM A 36: Standard Specification for Structural Steel
2. ASTM A 328: Standard Specification for Steel Sheet Piling
3. ASTM A 500: Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes
4. ASTM A 570: Specification for Steel, Sheet and Strip, Carbon, Hot Rolled, Structural Quality
5. ASTM A 572: Standard Specification for High-Strength Low-Alloy Columbium-Vanadium Structural Steel

1.03 JOB CONDITIONS:

A. The Contractor shall anticipate encountering buried structures, debris, and other materials along the alignment of the temporary excavation support systems. These existing structures, debris, and other materials may represent obstructions to the installation of the temporary excavation support systems. The Contractor shall pre-trench through the existing fill soils along the alignments of the temporary excavation support systems to remove obstructions.

1.04 PROTECTION OF EXISTING FACILITIES

A. The work shall be executed in such manner as to prevent any damage to the Owner's and any other property and existing site improvements, such as, but not limited to, buildings, railroad tracks, curbs, paving, utilities, structures, monuments, bench marks, and other public and private property. Protect existing

improvements from damage caused by settlement, vibration, lateral movement, undermining, washout, and other hazards created by installation operations.

B. Locate existing underground utilities in the areas of work. If utilities are to remain in place, provide adequate means of protection during installation operations.

1. It is the Contractor's responsibility to verify all existing utility locations either shown or not shown on the Drawings.

2. Should uncharted or incorrectly charted existing utilities be encountered during temporary excavation support system installation, consult the Engineer immediately for direction as to how to proceed. Cooperate with Engineer and utility companies in keeping respective services and facilities in operation. Repair damaged utilities to satisfaction of the utility owner.

3.

4. Do not interrupt existing utilities serving facilities occupied and used by Owner or others, except when permitted in writing by Owner and then only after acceptable temporary utility services have been provided.

5. Seal or otherwise plug utility laterals leading from the site to utilities in the streets during pre-trenching.

C. Barricade open excavations occurring as part of this work and post with warning lights. Operate warning lights during hours from dusk to dawn each day and as otherwise required by authorities having jurisdiction.

D. In case of any damage or injury caused in the performance of the work, the Contractor shall, at its own expense, make good on such damage or injury to the satisfaction of, and without cost to, the Owner. Existing buildings, structures, utilities, property, streets, sidewalks, and curbs damaged during the project work shall be repaired or replaced to their original condition. The railroad tracks located at Mill Street will be repaired by the railroad company during the work.

1.05 GENERAL REQUIREMENTS

A. The Contractor shall have the sole responsibility for maintenance and protection of existing utilities, structures, railroad tracks, and facilities within the zone impacted by excavations.

B. The Contractor shall leave in place certain elements of temporary excavation support, as shown on the Drawings and as specified herein.

C. The Contractor shall coordinate the installation, maintenance, and removal as applicable, of the temporary excavation support systems with the Contractor’s excavation activities (i.e., excavation, dewatering, and backfilling). The Contractor’s activities shall be consistent with the approach and methodology outlined in the Contractor’s design submittals that are reviewed by the Engineer.

SECTION 02160 - LATERAL SUPPORT OF EXCAVATION

D. The Contractor shall provide survey and layout for the installation of temporary excavation support systems.

E. The Contractor shall pre-trench along the alignment of the temporary excavation support walls through the fill soils and implement other procedures to remove obstructions in advance of wall construction.

F. The Contractor shall develop and implement mitigating and remedial measures to limit movements of the temporary excavation support wall, ground, adjacent buildings, streets, sidewalks, utilities, railroad tracks, and other facilities outside the excavation caused by the Contractor's construction activities. These mitigating and remedial measures shall be undertaken at no additional cost to the Owner.

1.06 DESIGN REQUIREMENTS

A. General Requirements

If the Contractor chooses an alternate temporary excavation support system to those specified herein for consideration by the Engineer the Contractor shall meet the following design criteria.

1. Analyze the site conditions and available subsurface investigation data, and make supplemental investigations as necessary for the proper design of temporary excavation support systems.

2. Temporary excavation support systems must be designed to retain and provide support for adjacent soil, rock, water, structures, utilities, and other features as applicable; and protect them from damage due to settlement, vibration, lateral movement, loss of ground, or any other causes related to this construction.

B. Design the component members of the temporary excavation support system to support, as applicable, the earth pressures, unrelieved hydrostatic pressures, seepage pressures, surcharge loads, traffic and construction equipment loads, and other surcharge loads. Design calculations and drawings shall be prepared and stamped by a professional engineer registered in the State of New Hampshire. Design each component of the temporary earth support system to support the maximum load that can occur during construction.

C. The Contractor's temporary excavation support system designs shall also consider the means and methods and construction process proposed by the Contractor (such as driving stresses in the sheet piling and impacts of driving on the integrity of the sheet piling interlocks).

D. Approval of the Contractor's plans, design calculations, and methods of construction by the Engineer does not relieve the Contractor of its responsibility for the adequacy of the temporary excavation support structure, preventing damage to structures, utilities, and paved areas adjacent to excavations, and the safety of persons working within excavated areas and the public at large.

SECTION 02160 - LATERAL SUPPORT OF EXCAVATION

E. Excavations shall not proceed more than 2 ft below any bracing level prior to the installation and/or preloading of bracing.

F. The Contractor shall submit a Movement Mitigation Plan, and implement such plan immediately if the Limiting Values specified in Section 02015 Geotechnical Instrumentation are exceeded or if other excessive movements occur as judged by the Engineer. The proposed plan may include, but not be limited to, additional bracing, segmented and/or slotted excavation, temporary berms, bracing slabs, water recharging, and/or other measures. The Contractor shall demonstrate that the proposed measures can be implemented immediately if required to prevent damage to site or off-site improvements.

G. The Contractor shall adhere to the applicable requirements of the Contract Documents, Occupational Safety and Health Administration (OSHA) Standards, and to all other applicable ordinances, codes, statutory rules, and regulations of federal, state, and local authorities having jurisdiction over the Work of this Section.

H. Work not in conformance with the specified requirements shall be improved, or removed and replaced, at no additional cost to the Owner. All costs related to testing of nonconforming Work or materials shall be paid for by the Contractor with no additional cost to the Owner.

1.07 QUALIFICATIONS

A. The Contractor or Subcontractor(s) installing the support and excavating the ground shall have a minimum of 5 years' experience in each specialty work item, and shall each have completed a minimum of five projects with similar specialty work using the same support system on at least two jobs of scope similar to or larger than required for this project.

1.08 QUALITY CONTROL

A. Perform all work in the presence of the Engineer, unless the Engineer has granted prior approval in writing to perform such work in his absence.

B. Perform all work in accordance with all current applicable regulations and codes of federal, state, and local agencies. In the event of conflict, comply with the strictest or most restrictive applicable requirements.

C. Provide quality control, testing, and inspection as required herein, as required by the Contractor's design engineer (if applicable), and in accordance with approved submittals.

1.09 SAFETY REQUIREMENTS

A. Methods of construction shall be such as to ensure the safety of the work, project participants, the public, third parties, and adjacent property, whether public or private. All work shall conform to the requirements of all Federal, State, and

local laws and regulations. The Contractor is solely and completely responsible for maintaining safe working conditions at the site at all times.

1.10 SUBMITTALS

A. Preconstruction: Submit to the Engineer the following a minimum of 4 weeks before the scheduled start of the applicable activity.

1. Evidence that the Contractor and Subcontractor(s) have the minimum experience in each specialty work item required herein. The Contractor shall employ supervising personnel with direct experience for each specialty work item.

2. Plan layout of the system indicating wall types, configurations and characteristics; dimensions, material properties, locations, spacing, support points of all brace members, if they differ from those shown on the Contract Documents.

3. Details of brace elements, including locations, layouts, sizes, and connections of all members, if they differ from those shown on the Contract Documents.

4. Detailed narrative outlining the construction sequence (i.e., installation and removal, as applicable, of the temporary excavation support system elements with respect to dewatering, excavation, and backfilling sequence). The narrative shall break down the wall and brace installation, mass excavation, brace removal and backfilling processes.

5. Details and a narrative of all utility installation, including the Elm Street replacement storm sewer.

6. Information on the delivery, storage, and handling of wall system elements, and installation equipment.

7. Mill certificates for all steel sheet piling, soldier piles, internal braces, and other steel components for the temporary excavation support system. Mill certificates shall be provided to the Engineer upon delivery of the steel to the site. Steel components not accompanied with a mill certificate may be rejected by the Engineer until such documentation is provided.

8. Detailed Movement Mitigation Plan to arrest wall, building, railroad track and ground movements if response values for ground surface or utility settlement included in Section 02015 Geotechnical Instrumentation and Monitoring are approached or exceeded, or are anticipated to be exceeded, or other unacceptable excavation support wall movements are occurring in the judgment of the Engineer.

B. Post-construction: Within 15 days of backfilling all excavations, submit a detailed as-built location plan of all remaining members, including identification,

size, plan location and cutoff elevation or level on one or more drawings of size 24 x 36 or larger. Provide the Engineer with a minimum of six sets of drawings in both hard copy and electronic format, acceptable to the Engineer.

PART 2 - PRODUCTS AND MATERIALS

2.01 MATERIALS

A. Structural Steel: Structural steel members, such as fabricated connections and accessories, steel W shapes, and other structural steel shall conform to the requirements of ASTM A 992 (Grade 50) or ASTM A 500 (Grade 46), unless otherwise approved.

B. Lagging: Lagging between soldier piles shall be timber, steel liner plate, steel roadway plate, or reinforced concrete.

1. Timber Lagging – Timber lagging shall be southern yellow pine No. 2 or better, having an Fb = 850 psi and Fc = 550 psi, or approved equal.

2. Steel Lagging – Shall comply with the material requirements for Structural Steel.

C. Sheet Piles: Steel sheet piling shall be continuous interlocking made in accordance with ASTM A 328 or ASTM A 857 or from steel meeting the requirements of ASTM A 570 or ASTM A 36.

D. Lean Concrete: Lean concrete shall have a low strength (in the range of 500-1,000 psi) and small aggregate such that it is easily and evenly chipped away for lagging installation.

PART 3 - EXECUTION

3.01 GENERAL REQUIREMENTS

A. Start: Commence support of excavation installation and excavations only after submittals have been reviewed by the Owner.

B. Methods: Methods of construction for excavations shall be such as to ensure the safety of the work, Contractor employees, the public, and prevent damage to adjacent property and improvements, whether public or private.

C. Pre-trench along the entire alignment of temporary excavation support walls through the fills soils.

D. Install temporary excavation support systems to the limits, depths, and tolerances specified herein. Install temporary excavation support systems such that they are in direct contact with the material to be retained.

E. Use templates or other temporary alignment facilities as necessary to maintain the verticality of temporary excavation support systems to specified tolerances.

SECTION 02160 - LATERAL SUPPORT OF EXCAVATION

F. Excavation: Excavations shall be to the dimensions as necessary to accomplish the work but in no case larger than as shown on the Drawings and as specified including the installation of all utilities

G. Welding: All welding shall conform to the applicable provisions of ANSI/AWS D1.1, including use of qualified welders, welding operators, and tackers.

H. Control vibrations and noise associated with system installations so as to prevent damage to site improvements and disturbance to occupants.

I. Support System Monitoring: Install support system monitoring provisions as indicated in the submittals. Install and monitor instrumentation in conformance with Section 02015 Geotechnical Instrumentation and Monitoring.

3.02 WATER CONTROL

A. Water control including but not limited to dewatering, surface drainage, water removal, and disposal shall be in accordance with Section 02140 Dewatering.

3.03 SOLDIER PILES AND LAGGING

A. Predrilled Holes: Install piles in predrilled holes to the tip elevations shown in the reviewed submittals. Provide casing or drilling mud as required to prevent caving of holes and loss of ground in predrilled holes.

B. Lean Concrete Encasement: After soldier pile has been seated plumb in the drill hole, encase it with lean concrete from the tip to the ground surface. Lean concrete strength shall be in accordance with reviewed submittals. Lean concrete shall be placed by means of a tremie system while applying vibration through the pile.

C. Lagging: Provide timber, steel liner plate, steel roadway plate, or precast concrete lagging of sufficient strength to withstand lateral earth pressures.

D. Lagging Installation: Install lagging with a maximum 1/8-in. gap between adjacent boards or panels. As installation progresses, backfill the voids between the excavation face and the lagging with sand or pea gravel packed into place. Pack voids with materials such as hay, burlap, or geotextile fabric where necessary to allow drainage of groundwater without loss of ground due to piping. Lagging shall be first installed when excavation is a maximum depth of 4 ft or sooner if the excavation walls appear unstable. At no time after the installation of lagging begins shall excavation bottom elevation be more than 2 ft deeper than the lowest installed lagging board.

3.04 STEEL SHEET PILING:

A. Drive in plumb position with each sheet pile interlocked with adjoining piles for its entire length so as to form a continuous diaphragm throughout the length of each run of wall, bearing tightly against original ground.

SECTION 02160 - LATERAL SUPPORT OF EXCAVATION

B. Drive to the depth indicated on the shop drawings; exercise care in driving to avoid damaging adjacent utilities and structures, and so that interlocking members can be extracted without damaging adjacent structures or utilities.

3.05 TRENCH BOX EXCAVATION

A. The Contractor shall install trench box excavation support systems in area shown on the drawings.

3.06 INTERNAL BRACING SUPPORT SYSTEM

A. Internal Bracing: The internal bracing support system shall include wales, struts, and/or shores.

B. Struts: Provide struts with intermediate bracing as needed to prevent rotation, crippling, or buckling of connections and points of bearing between structural steel members. Allow for eccentricities caused by field fabrication and assembly.

C. Web Stiffeners, Plates, and Angles: Include web stiffeners, plates, or angles as needed to prevent rotation, crippling, or buckling of connections and points of bearing between structural steel members. Allow for eccentricities caused by field fabrication and assembly.

D. Bracing Supports: Install and maintain all bracing support members in tight contact with each other and with the surface being supported.

3.07 REMOVAL OF SUPPORT SYSTEM

A. Removal: At Mill Street the soldier pile and tremie concrete wall shall be removed above El. 254. At Elm street all support of excavation elements within 5 ft of finished grade, including soldier piles, sheet piling, wales, struts, lagging, and shores shall be removed. Excavation support systems' components greater than 5 ft below the ground surface shall be removed if practical, or if degradation or decay over time would result in damage to nearby facilities. Removal of the support system shall be performed in a manner that will not disturb or harm adjacent construction or facilities and only after backfill has been fully compacted. All voids created by the removal of the excavation support systems shall be immediately filled with controlled density fill, lean concrete, or cement grout, as approved by the Engineer. The support system removed from the excavation shall remain the property of the Contractor and shall be removed from the site.

B. Record locations of all excavation support elements remaining and submit to the Engineer

END OF SECTION

SECTION 02201 – EARTHWORK

PART 1 – GENERAL

1.01 WORK SPECIFIED

A. Description

1. Excavation and backfilling including the loosening, removing, refilling, transporting, storage and disposal of all materials classified as "earth" necessary to be removed or replaced for the construction and completion of all work under the Contract.

2. Excavation to the widths and depths shown on the Drawings or as specified.

1.02 REFERENCES

A. Applicable Codes, Standards, and Specifications

1. American Society for Testing and Materials (ASTM)

B. Department of Public Works, Town of Milford, New Hampshire, "Infrastructure, Design, Construction and Administration Standards", April 2010

C. AREMA Manual for Railway Engineering Specifications; for ballast, subgrade, and sub-ballast construction.

D. Section 01410 – Town and Railroad Requirements

E. Section 02240 – Construction Dewatering

1.03 DEFINITIONS

A. Earthwork is defined to include, but not limited to, clearing, topsoil removal and storage, excavations of soil, sediment, concrete, brick, and any other material that is encountered in the excavations, handling and disposal of materials, maintenance of excavations, removal of water, steel sheetpiling and bracing, backfilling operations, rough grading, preparation of staging areas (i.e., berms) compaction, and protection of existing structures and facilities.

B. Excavation (or Trenching)

1. Grubbing, stripping, removing, storing, and re-handling of all materials of every name and nature necessary to be removed for all purposes incidental to the construction and completion of all the work under construction.

2. The removing and disposing of all surplus materials from the excavations in the manner specified.

3. The maintenance, accommodation, and protection of travel and the temporary paving of highways, roads, and driveways.

4. The supporting and protecting of all tracks, rails, buildings, curbs, sidewalks, pavements, overhead wires, poles, trees, vines, shrubbery, pipes, sewers, conduits, or other structures or property in the vicinity of the work, whether above or underground, and the restoration of the same in case of settlement or other injury.

5. All temporary bridging and fencing and moving of same.

C. Backfill

1. Material placed in excavations and trenches to the elevation indicated on the Drawings or as directed using materials specified; and the compacting of all materials placed by rolling, ramming, or as may be required and approved by the Engineer.

D. Spoil

1. Surplus excavated materials not required or not suitable for backfills or embankments.

E. Embankments

1. Fills constructed above the original surface of the ground or such other elevation as specified or directed.

F. Limiting Subgrade

1. The underside of the pipe barrel for pipelines.

2. The underside of footing lines for structures.

G. Excavation Below Subgrade

1. Excavation below the limiting subgrades of structures or pipelines or as shown and specified on the Drawings.

2. Where materials encountered at the limiting subgrades are not suitable for proper support of structures or pipelines, the Contractor shall excavate to such new lines and grades as required.

PART 2 – PRODUCTS

2.01 LOW PERMEABILITY SOIL MATERIAL

A. Low permeability soil material shall be free of roots, woody vegetation, other deleterious material, and rocks greater than 1-in. diameter at surface grade.

B. Material used for liner shall meet following requirements.

1. Classified as ML, MH, CL, or CH by ASTM D2487.

2. Minimum plasticity index of 10 or greater.

3. Re-compacted permeability equal to or less than 1 x 10^{-5} cm/sec.

4. Organic Content: less than 3%.

5. Maximum Particle Size: 1/3 the depth of a loose lift.

PART 3 – EXECUTION

3.01 UNAUTHORIZED EXCAVATION

A. Descriptions

1. Whenever excavations are carried beyond or below the lines and grades shown on the Drawings, or as given or directed by the Engineer, all such excavated space shall be backfilled with soil, selected fill, concrete, or other materials as the Engineer may direct. All refilling of unauthorized excavations shall be at the Contractor's expense.

2. All material that slides, falls, or caves into the established limits of excavations due to any cause whatsoever, shall be removed and disposed of at the Contractor's expense and no extra compensation will be paid to the Contractor for any materials ordered for refilling the void areas left by the slide, fall, or cave-in.

3.02 REMOVAL OF WATER

A. General

1. The Contractor shall, at all times, provide and maintain proper and satisfactory means and devices for the removal of all water entering the excavations, and shall remove all such water as fast as it may collect, in such a manner as shall not interfere with the execution of the work or the proper placing of pipes, structures, or other work.

2. Unless otherwise specified, all excavations that extend down to or below the static groundwater elevations shall be dewatered by lowering and maintaining the groundwater beneath such excavations at all times when work thereon is in progress in accordance with Section 02240 – Construction Dewatering.

3. Where the presence of fine-grained subsurface materials and a high groundwater table may cause the upward flow of water into the excavation resulting in quick or unstable conditions, the Contractor shall install and operate an approved dewatering system and vertical gradient control system designed by a NH licensed Professional Engineer (P.E.) to prevent the upward flow of water during construction.

4. Water removed from the excavation shall be treated and discharged in a suitable manner without injury to adjacent property, the work under construction, pavement, roads, drives, or water courses. Water generated during excavation activities will be collected and treated at the temporary water treatment system as described in Section 13602 – Temporary Water Treatment System prior to discharge.

5. Any damage to existing buildings, railroad tracks, or any other structure (above or below grade) caused by or resulting from dewatering operations shall be the sole responsibility of the Contractor and shall be repaired or replaced at no additional cost to the Owner.

B. Work Included

1. The furnishing and operation of pumps and appliances needed to maintain thorough drainage of the work in a satisfactory manner.

3.03 STORAGE OF MATERIALS

A. Excavated Materials

1. All excavated materials shall be stored in locations as identified on the Drawings or reviewed Contractor's plans so as not to endanger the work, and so that easy access may be had at all times to all parts of the excavation. Stored materials shall be kept neatly piled and covered, so as to cause as little inconvenience as possible to workers, public thoroughfares, or adjoining property holders. All excavated materials must be managed in accordance with federal, state, and local regulations for proper erosion control requirements such as covering and seeding and planting while temporarily stockpiled on site prior to disposal.

2. Special precautions must be taken to permit access at all times to fire hydrants, fire alarm boxes, and other points where access may involve the safety and welfare of the general public.

B. Backfill Materials

1. All backfill materials will be stored by type, separately from one another and from excavated material. All backfill materials must be stored in accordance with federal, state, and local regulations for proper erosion control requirements such as covering and seeding and planting while temporarily stockpiled on site prior to backfilling activities.

3.04 DISPOSAL OF MATERIALS

A. Cleared Material

1. All non-TSCA materials cleared from at or below grade (e.g., tree stumps/roots, surface debris) must be disposed of in accordance with the Contract and applicable Federal, State, and Local regulations.

2. All cleared materials subject to offsite disposal shall be broken into sufficiently small pieces (with a maximum 2-foot dimension) or as specified by the receiving disposal facility so as to be acceptable to the disposal facility.

3. All vegetative materials cleared from above grade (e.g., trees, brush, branches) must be removed and handled in a manner that will prevent contact with the materials subject to removal and disposal.

4. Foreign materials and other surface debris must be disposed of as regulated materials.

3.05 BEDDING AND BACKFILLING

A. General

1. All excavations shall be backfilled to the original surface of the ground or to such other grades as specified on the Drawings or as may be specified or directed by the Engineer.

2. Backfilling shall be done with suitable backfill material as specified.

3. Any settlement occurring in the backfilled excavations shall be refilled and compacted at no additional cost to the Owner.

4. Placement and compaction of fill and select fill materials for Keyes Park Access Road, Elm Street and Mill Street pavement curb and sidewalk construction shall be as described in the Town of Milford Department of Public Works Standards.

5. Placement and compaction of subgrade, ballast and sub-ballast for the railroad tracks shall be as described in the AREMA Manual for Railway Engineering Specifications for ballast, subgrade, and sub-ballast construction.

B. Backfill Materials (excluding treated soils)

1. Select fill materials required for filling, backfilling, bedding, subbase, and other purposes including soil fill material shall be as shown on the Drawings.

C. General Backfilling Requirements

1. Backfilling shall be started as soon as practicable after excavation of impacted materials has been completed, soil samples obtained as required, and documentation completed by the Contractor (e.g., survey) and after the satisfactory review of the excavation and verification sampling results by the Engineer. All unsuitable materials and debris shall be removed prior to backfilling operations. Backfilling shall be carried on expeditiously thereafter.

2. Backfilling shall be started at the lowest section of the area to be backfilled.

3. Backfilling shall be conducted using a maximum lift thickness of 12 inches.

4. Drainage of the areas being backfilled shall be maintained at all times.

5. No backfill shall be placed against foundation walls or structural members unless properly shored and braced or of sufficient strength to withstand lateral soil pressures.

6. Backfill material shall be observed prior to placement, and all roots, vegetation, organic matter, or other foreign debris shall be removed. Stones larger than 6 inches in any dimension shall be removed or broken. Stones shall not be allowed to form clusters with voids.

7. When backfill material is too dry for adequate compaction, water shall be added to the extent necessary.

8. No backfill material shall be placed on frozen ground nor shall the material itself be frozen or contain frozen soil fragments when placed. No calcium chloride or other chemicals shall be added to prevent freezing.

9. Material incorporated in the backfilling operation that is not in satisfactory condition shall be subject to rejection, removal, and replacement at the Contractor's expense.

10. Any off-site materials brought on-site for use as backfill materials must be from a certified New Hampshire Department of Transportation (NHDOT) source, and results of analytical testing for VOCs, SVOCs, PCBs, pesticides/herbicides and metals must be presented. The Engineer will also sample proposed backfill sources.

D. Cover System

1. Lift thickness for low permeability soil shall be less than 9 in. and shall be determined by the ability of compaction equipment to achieve minimum 90% Modified Proctor density throughout entire lift or greater to meet permeability requirements with maximum of 20 passes. Compaction equipment shall be equivalent to equipment used for test pad construction (if required by the Engineer). (Maximum loose lift thickness shall not exceed 9 in. prior to compaction for all lifts, unless otherwise modified by the low permeability soil test pad certification).

2. Sand layer shall be placed with a maximum lift thickness of 12 inches. Sand layer will be lightly compacted using tracked equipment.

3. Topsoil shall be place in accordance with Section 02210 – Topsoil and Seeding.

4. Remove boulders, rocks, and cobbles equal to or greater than 3 in. in diameter, or with a diameter greater than 1/3 lift thickness, from surface of liner material. Discard away from working area.`

5. Contractor to provide minimum of 18 inches of compacted low permeability soil in all locations, however, maximum variation in remaining cover layer is 0.1 ft. Contractor responsible for meeting these requirements at his expense.

6. Maintain low permeability soil surface in condition suitable for sand layer installation until surface is covered.

7. Scarify sealed lifts prior to next lift placement.

8. Placement of low permeability soil layer may occur below 32°F with Engineer's approval, provided frozen soil not placed. Frozen clay material shall be removed before additional clay lifts placed. Placement under these conditions does not relieve Contractor from achieving Specification requirements.

9. Conformance testing of the low permeability soil material shall be performed to ensure the consistency of the properties of the soil placed from the borrow source. The tests shown in the following table shall be performed:

Test Description	Frequency
Moisture Content (ASTM D2216, D4643)	1 per 20 Nuclear Density Tests (ASTM D6938).
Particle Size (ASTM D1140, D422)	1 per 1000 C.Y.
Atterberg Limits (ASTM D4318)	1 per 1000 C.Y.
Density, Nuclear Method (ASTM D6938)	1 per 5,000 square feet of each lift of backfill
Laboratory Compaction (ASTM D1557 for Modified)	1 per 5,000 square feet or 9 tests per acre per lift
Laboratory Hydraulic Conductivity (ASTM D5084)	1 per 1,000 C.Y. of backfill.
In-Place Sampling (ASTM D1587) and Laboratory Hydraulic Conductivity (ASTM D5084)	2 tests per acre of placed backfill material

At least one test of the particle size, Atterberg limits, and laboratory compaction tests shall be performed each day soil is being placed. Compaction test results shall be compared to previous results on the same material type to verify the compaction characteristics have remained the same.

E. Compaction and Density Control

1. The compaction shall be as specified for the type of earthwork.

   a. The compaction specified shall be the percent of maximum dry density as determined by ASTM D1557, Modified Proctor.

   b. The compaction equipment shall be suitable for the material encountered.

2. In-place density tests shall be performed by the Contractor and observed by the Engineer, as necessary to satisfy compaction requirements. The Contractor shall be responsible for all costs associated with in-place density tests.

a. The moisture-density relationship of the backfill material shall be determined by ASTM D1557. Compaction curves for the full range of materials used shall be developed by the Contractor and submitted to the Engineer prior to moving such material to the site.

b. In-place density shall be determined by the methods of ASTM D1556 or ASTM D2922 and shall be expressed as a percentage of maximum dry density.

c. Tests shall be performed at a frequency of 1 test per 5000 square feet per lift or a minimum of one test per lift. The Engineer may require additional testing depending on the lift area or length.

3. Where required to obtain the optimum moisture content, the Contractor shall add, at its expense, sufficient water during compaction to assure the specified maximum density of the backfill. If, due to rain or other causes, the material exceeds the optimum moisture content, it shall be allowed to dry, assisted if necessary, before resuming compaction or filling efforts.

4. The Contractor shall be responsible for all damage or injury done to pipes, structures, property or persons due to excavation or placing and compacting of backfill.

3.06 OTHER REQUIREMENTS

A. Hauling Material on Streets

1. When it is necessary to haul material over the streets or pavement, the Contractor shall provide suitable tight vehicles so as to prevent deposits on the street or pavements. In all cases where any materials are dropped from the vehicles, the Contractor shall clean up the same as often as required to keep the crosswalks, streets, and pavements clean and free from dirt, mud, stone, and other hauled material. The Contractor shall also observe all existing road/bridge weight limits/restrictions when hauling materials and/or transporting heavy equipment to and from the Site.

B. Dust Control

1. It shall be the sole responsibility of the Contractor to control the dust created by any and all of its operations to such a degree that it will not endanger the safety and welfare of the general public. At a minimum, dust control shall be in accordance with the requirements of Section 02260 - Dust, Soil Erosion and Sedimentation Control Plan.

C. Odor Control

1. Contractor shall control nuisance odors at all times using appropriate odor controls (e.g., tarps, odor suppressants, foam spray, etc.). If odors continue during

excavation activities, Contractor will be required to stop work, prepare and submit for review, an Odor Control Plan indicating all actions that the Contractor will implement to control odors.

D. Test Pits

1. For the purpose of obtaining detailed locations of underground obstructions, the Contractor shall make excavations in advance of the work. The Contractor shall provide the Engineer and Dig Safe System, Inc. with at least 5-day notice prior to initiating the test pit excavation activities. The Contractor shall consider such work as incidental to the work involved, and no separate payment will be made for such work. Any excavations shall be backfilled with the removed material. The test pit shall be backfilled with clean imported material.

E. Grading

1. After the completion of all fill and backfill operations, the Contractor shall grade the site to the lines, grades, and elevations shown on the Drawings, taking into account any subsequent site restoration and paving requirements.

2. Grading shall be performed as shown on the Drawings and as directed by the Engineer.

3.07 EXISTING FACILITIES

A. General

1. Refer to Section 01760 – Protection of Existing and Installed Construction for proper protocols and procedures related to such construction and as specified herein.

2. Some of the existing subsurface facilities likely to be encountered during construction of the work or located in such close proximity to the work to be done under the Contract will require special precautions for their protection.

3. These facilities may include, but are not necessarily limited to, buildings, streets, railroad tracks, utility lines, retaining walls, and pipes. Placement of subgrade, ballast and sub-ballast for the railroad tracks shall be as described in the AREMA Manual for Railway Engineering.

4. The sizes, locations, and heights or depths of existing facilities and structures, if indicated, are only approximate and the Contractor shall conduct its operations with caution and satisfy itself as to the accuracy of the information given.

5. The Contractor shall not claim nor shall it be entitled to receive compensation for damages sustained by reason of the inaccuracy of the information given or by reason of its failure to properly maintain and support such structures.

6. There may be other subsurface facilities, the existence and/or location of which are not known, such as individual water and gas services, electrical conduits, telephone, storm drains, etc.

7. The Contractor shall consult with the owners of such facilities and shall determine, prior to construction, the location and depth of any such facilities which may exist in the area to be excavated.

8. If underground facilities are known to exist in an area but their location is uncertain, the Contractor shall exercise reasonable care in its excavation technique to avoid damage to them and shall be fully responsible for repair/replacement per the utility owner's requirements at no additional cost to the Owner.

9. The Contractor shall notify "Dig Safe System, Inc" at 811 prior to work.

B. Notification and Protection Procedures

1. Except where superseded by state or local requirements, or in the absence of any applicable regulations, the Contractor shall, at a minimum, include the following procedures in his operations:

a. Prior to Excavating

i. Determine correct field location of all nearby underground and aboveground facilities or arrange for the owner of the utilities to locate them.

ii. Notify owners of nearby underground facilities when excavating is to take place, allowing them reasonable time to institute precautionary procedures or preventive measures which they deem necessary for protection of their facilities.

iii. In cooperation with owners of nearby facilities, provide temporary support and protection of those underground facilities that could create hazardous conditions if damaged or may be especially vulnerable to damage by virtue of their physical condition or location.

b. Immediately notify any utility owner of any damage to its underground facilities resulting from the Contractor's operations and arrange for repairs to be made as soon as possible at the Contractor's expense.

c. In case of an electrical short or escape of gas or hazardous fluids (resulting from damage to an underground facility), immediately notify the Fire Department and all persons who might be endangered and assist in evacuation of people from the area in accordance with Section 01350 – Health and Safety and associated Contractor Health and Safety Plan (HASP).

2. Contractor shall acquire and abide by all necessary permits and arrangements for working near any aboveground/underground facility, railroad, cable, utility, street, waterway, etc.

C. Support of Existing Facilities

1. Unless scheduled for demolition/removal as part of the Contract, existing facilities (e.g., retaining walls, utility poles, etc.) encountered within or adjacent to an excavated area shall be adequately supported, blocked, and/or braced.

2. If required by the owner of such facility, such supports shall be left in place to the extent required. Backfilling and compaction under and around the facilities shall be accomplished with extreme caution so as not to disturb or damage the facility or its supports, and so as to prevent future settlement and possible rupture of the facilities.

3. Existing facilities removed by the Contractor in lieu of support of such facilities shall be replaced at the Contractor's expense.

- END OF SECTION -

SECTION 02203 – STRUCTURAL EXCAVATION, BACKFILL AND COMPACTION

PART 1 – GENERAL

1.01 WORK SPECIFIED

A. The Contractor shall be responsible for all excavation, backfilling, compaction, slope protection, erosion control, and rough and final site grading required to complete the Work as shown on the Drawings and as specified herein. Excavation and backfill shall be performed in accordance with the applicable provisions of Section 02201 – Earthwork, unless modified herein.

B. Removal and discharge of water.

C. The Contractor shall provide survey verification and certification of all subgrade elevations, and final grade elevations as depicted on the Drawings or as directed by the Engineer.

1.02 REFERENCES

A. American Society of Testing and Materials (ASTM)

1. D1557 – Standard Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort.

1.03 SUBMITTALS

A. As-built grading plans stamped and signed by a land surveyor licensed in NH.

PART 2 – PRODUCTS

NOT USED

PART 3 – EXECUTION

3.01 EXCAVATION

A. Limits of Excavation

1. Excavations shall be made to the elevations or subgrades as shown on the Drawings.

2. Bedrock.

3. In no case will undercutting excavation faces be permitted.

B. Subsurface Reinforcement

1. Where necessary, subgrade reinforcement shall be performed as specified in Section 02160 – Lateral Support of Excavation.

C. Removal of Water

1. At all times, provide and maintain proper and satisfactory means and devices for the removal of all water entering the excavations, and remove all such water as fast as it may collect, in such manner as shall not interfere with the performance of the Work or the proper placing of pipes, structures, or other Work.

2. The removal, handling, and discharge of water shall be in accordance with Section 02201 – Earthwork, Section 02240 – Construction Dewatering, and Section 13602 – Temporary Water Treatment System.

3.02 BACKFILL AND COMPACTION

A. Backfilling shall be with suitable materials as shown on the Drawings.

B. Soil fill material used to establish rough grade shall be placed in horizontal lifts not to exceed 12 inches in loose thickness and shall be compacted as follows, unless otherwise specified or directed by the Engineer.

1. Where structures, driveways, sidewalks, parking lots or other features are to be constructed on the graded area, the soil fill material shall be placed in horizontal lifts not to exceed 8 inches in loose thickness and compacted to obtain a minimum of 95 percent of maximum dry density, as determined by the ASTM testing Method 1557 unless otherwise specified on the Drawings or as directed by the Engineer.

2. Other areas shall be compacted to obtain a minimum of 90 percent of maximum dry density unless otherwise specified on the Drawings or as directed by the Engineer.

C. Select fill material used to establish rough or final grade shall be placed in horizontal lifts not to exceed 12 inches in loose thickness and compacted as specified in Part 3.02-B (above), unless otherwise specified or directed.

D. The topsoil used to establish final grade shall be placed in a single loose lift of not less than four inches. No compaction is required or allowed. Requirements for topsoil are specified in Section 02210 – Topsoil and Seeding.

E. The Contractor shall, at its own expense, moisture condition the fill to meet the compaction requirements as specified.

SECTION 02203 – STRUCTURAL EXCAVATION, BACKFILL AND COMPACTION

F. The Contractor shall maintain survey control for each layer placed. All final elevations shall be verified and an as-built grading plan produced and stamped by a land surveyor licensed in NH and will be submitted to the Engineer.

- END OF SECTION -

SECTION 02204 – UTILITY CORRIDOR TRENCHING

PART 1 – GENERAL

1.01 WORK SPECIFIED

A. Excavation and backfill as required for installation of pipe, conduit, or utility corridors, or other construction in a trench in accordance with the applicable provisions of Section 02201 – Earthwork, unless modified herein.

B. Removal and discharge of water.

1.02 REFERENCES

A. Applicable Town of Milford Regulations

B. Applicable Hillsborough County Regulations

PART 2 – PRODUCTS

NOT USED

PART 3 – EXECUTION

3.01 EXCAVATION

A. Trench excavations and utility corridors shall be located as shown on the Drawings or as specified by the Engineer. Under ordinary conditions, trenches shall be by incorporation into backfill and site grading operations.

B. The width and depth of each trench excavation or utility corridor shall be as shown on the Drawings.

C. The alignment and depth shall be determined and maintained by the use of a string line installed on batter boards above the trench or utility corridor, a double string line installed along side of the trench or utility corridor, or a laser beam system.

D. During pipe installation, trenches shall not be opened for more than 300 feet in advance of pipe installation nor left unfilled for more than 100 feet in the rear of the installed pipe when Work is in progress without the written consent of the Engineer. Open trenches shall be protected and barricaded as required. There will be no trenches left open at the close of each working day unless properly protected.

E. Bridging across open trenches shall be constructed and maintained where required, or as specified or directed at no additional cost to the Owner.

SECTION 02204 – UTILITY CORRIDOR TRENCHING

3.02 REMOVAL OF WATER AND DRAINAGE

A. At all times, provide and maintain proper and satisfactory means and devices for the removal of all water entering the trench or utility corridor, and remove all such water as fast as it may collect, in such manner as shall not interfere with the execution of the Work.

B. The removal of water shall be in accordance with Section 02201 – Earthwork, Section 02240 – Earthwork, and Section 13602 – Temporary Water Treatment System.

3.03 SUBGRADE PREPARATION FOR PIPE

A. Where pipe is to be laid on undisturbed bottom of excavated trench, mechanical excavation shall not extend lower than the finished subgrade elevation at any point.

B. Where pipe is to be laid on special granular material the excavation below subgrade shall be to the depth specified on the Drawings. The excavation below subgrade shall be refilled with granular material as specified, shall be deposited in layers not to exceed 8 inches, and shall be thoroughly compacted to 95 percent maximum density (per ASTM D698) prior to the preparation of pipe subgrade.

C. The subgrade shall be prepared by shaping with hand tools to the contour of the pipe barrel to allow for uniform and continuous bearing and support on solid undisturbed ground or embedment for the entire length of the pipe.

D. Pipe subgrade preparation shall be performed immediately prior to installing the pipe in the trench. Where bell holes are required, they shall be made after the subgrade preparation is complete and shall be only of sufficient length to prevent any part of the bell from coming in contact with the trench bottom and allowing space for joint assembly.

3.04 PIPE EMBEDMENT

A. All pipe shall be protected from lateral displacement and possible damage resulting from superimposed backfill loads, impact or unbalanced loading during backfilling operations by being adequately embedded in suitable pipe embedment material. To ensure adequate lateral and vertical stability of the installed pipe during pipe jointing and embedment operations, a sufficient amount of the pipe embedment material to hold the pipe in rigid alignment shall be uniformly deposited and thoroughly compacted to the pipe springline on each side, and back of the bell (for bell and spigot pipe), of each pipe as laid.

B. Embedment materials placed above the centerline of the pipe to a depth of 12 inches above the top of the pipe barrel shall be deposited in such manner as to not damage the pipe. Compact embedment materials to obtain 95 percent maximum density to be determined as set forth in Section 02201 – Earthwork.

SECTION 02204 – UTILITY CORRIDOR TRENCHING

3.05 BACKFILL ABOVE EMBEDMENT

A Backfill for utility corridors shall be marked with orange mesh fence and metallic warning tape as specified on the Drawings.

B. The remaining portion of the pipe trench above the embedment shall be refilled with suitable materials compacted as specified.

1. The trench shall be backfilled in loose horizontal lifts not more than 8 inches in thickness, and compacted to obtain 95 percent maximum density, and determined as set forth in Section 02201 - Earthwork.

2. Hand tamping shall be required around buried utility lines or other subsurface features that could be damaged by mechanical compaction equipment.

C. Backfilling of trenches beneath, across or adjacent to drainage ditches and water courses shall be done in such a manner that water will not accumulate in unfilled or partially filled trenches and the backfill shall be protected from surface erosion.

D. All settlement of the backfill shall be refilled and compacted as it occurs.

E. Temporary pavement shall be placed as specified in Section 02208 – Restoration of Surfaces.

- END OF SECTION -

SECTION 02208 – RESTORATION OF SURFACES

PART 1 – GENERAL

1.01 WORK SPECIFIED

A. All types of surfaces, sidewalks, streets, curbs, gutters, culverts, and other features disturbed, damaged, or destroyed during the performance of the work under or as a result of the operations of the Contract, shall be restored and maintained, as specified herein.

B. The quality of materials and the performance of work used in the restoration shall produce a surface or feature equal to or better than the condition of each before the initiation of Work, as reviewed and approved by the Engineer.

C. Prior to the use of any off-site areas for construction support, at a minimum, a protective cover must be installed. The protective cover shall be constructed as presented in the Contract Documents. In addition, documentation of the pre-use conditions shall be performed in the presence of the Engineer. Upon the completion of use of the areas, the protective cover must be removed and disposed of and the area must be restored to pre-use conditions. A final inspection to observe and provide documentation of the post-use conditions must be conducted with the Engineer.

1.02 REFERENCES

A. American Nursery and Landscape Association.

B. Department of Public Works, Town of Milford, New Hampshire, “Infrastructure, Design, Construction and Administration Standards”, April 2010

1.03 SUBMITTALS

A. A schedule of restoration operations shall be submitted by the Contractor for review.

B. Test reports, certifications, and mix designs for all materials to be incorporated into the restoration work.

1.04 SCHEDULE OF RESTORATION

A. After an accepted schedule has been agreed upon, it shall be adhered to unless otherwise revised and subsequently reviewed by the Engineer.

B. The replacement of surfaces at any time, as scheduled or as directed, shall not relieve the Contractor of responsibility to repair damages by settlement or other failures at no additional cost to the owner.

PART 2 – PRODUCTS

NOT USED

SECTION 02208 – RESTORATION OF SURFACES

PART 3 – EXECUTION

3.01 PAVEMENT

A. The Contractor shall place temporary pavement over all disturbed areas of streets, driveways, sidewalks, and other traveled places where the original surface has been disturbed as a result of its operations.

B. The pavement shall be an Asphalt concrete as approved by the Engineer and in accordance with Section 02645 - Bituminous Concrete Pavement and other applicable NHDOT requirements.

C. Compaction of temporary asphalt concrete shall be performed with smooth wheel rollers of sufficient size and number to satisfactorily compact the asphalt mixture while it is still in a workable condition. Rolling shall continue until all roller marks and creases are removed. Surfaces shall be maintained free from bumps, ridges, potholes, and other non-conformities (exceeding ¾ inch as measured by a 10-foot straight edge), including the use of additional material to maintain satisfactory driving surfaces.

D. For dust prevention, treat all surfaces not covered with cold patch as frequently as may be required.

E. Temporary pavement shall be maintained by the Contractor in a safe and satisfactory condition until such time as the permanent paving is completed. Immediately remove and restore all pavement that becomes unsatisfactory.

3.02 CONCRETE PAVEMENT AND PAVEMENT BASE

A. Concrete pavements and concrete bases for asphalt, brick, or other pavement surfaces shall be replaced with Class "A" Concrete, air-entrained.

B. Paving slabs or concrete bases shall be constructed to extend 1 foot beyond each side of the trench and be supported on undisturbed soil. Where such extension of the pavement will leave less than 2 feet of original pavement slab or base, the repair of the pavement slab or base shall be extended to replace the slab to the original edge of the pavement or base unless otherwise indicated on the Drawings.

C. The new concrete shall be of the same thickness as the slab being replaced and shall contain the adequate amount of temperature and shrinkage reinforcement.

1. New concrete shall be placed and cured in accordance with the applicable provisions of Section 03001 – Concrete and other applicable NHDOT Standard Specifications.

SECTION 02208 – RESTORATION OF SURFACES

3.03 STONE OR GRAVEL PAVEMENT

A. All pavement and other areas surfaced with stone or gravel shall be replaced with material to match the existing surface unless otherwise specified.

1. The depth of the stone or gravel shall be at least equal to the existing.

2. After compaction, the surface shall conform to the slope and grade of the area being replaced.

3.04 CONCRETE WALKS, CURBS, AND GUTTER REPLACEMENT

A. Concrete walks, curbs, and gutters removed or damaged in connection with or as a result of the construction operations shall be replaced with new construction.

1. The minimum replacement will be a flag or block of sidewalk and 5 feet of curb or gutter.

2. The walk shall be not less than 5 inches in thickness or the thickness of the replaced walk where greater than 5 inches, shall have construction joints spaced not more than 25 feet apart, shall have expansion joints spaced not more than 50 feet apart, and shall be sloped at right angles to the longitudinal centerline approximately ⅛-inch per foot of width, unless otherwise specified by the Town.

B. One-half-inch expansion joint material shall be placed around all objects within the sidewalk area as well as objects to which the new concrete will abut, such as valve boxes, manhole frames, curbs, buildings, and others.

C. Walks shall be hand-floated and broom-finished, edged and grooved at construction joints and at intermediate intervals matching those intervals of the walk being replaced.

1. The intermediate grooves shall be scored a minimum of one-quarter of the depth of the walk.

2. The lengths of blocks formed by the grooving tool and distances between construction and expansion joints shall be uniform throughout the length of the walk in any one location.

D. The minimum length of curb or gutter to be left in place or replaced shall be 5 feet. Where a full section is not being replaced, the existing curb or gutter shall be saw cut to provide a true edge.

1. The restored curb or gutter shall be the same shape, thickness, and finish as being replaced and shall be built of the same concrete and have construction and expansion joints as stated above for sidewalks.

SECTION 02208 – RESTORATION OF SURFACES

E. All concrete shall be placed and cured as in accordance with the applicable provisions of Town of Milford DPW Standards and other applicable NHDOT requirements.

3.05 LAWNS AND IMPROVED AREAS

A. The area to receive topsoil shall be graded to a minimum depth of 4 inches below the proposed finish surface or as shown on the Drawings.

B. The furnishing and placing of topsoil, seed, and mulch shall be in accordance with Section 02210 – Topsoil and Seeding.

C. When required to obtain germination, the seeded areas shall be watered in such a manner as to prevent washing out of the seed.

D. Any washout or damage which occurs shall be regraded and reseeded until good sod growth is established.

E. The Contractor shall maintain the newly seeded areas, including regrading, reseeding, watering, and mowing, in good condition in accordance with Section 02210 – Topsoil and Seeding.

3.06 OTHER TYPES OF RESTORATION

A. Trees, shrubs, and landscape items, either located outside the limits of work or designated to be saved, that are damaged or destroyed as a result of the construction operations shall be replaced in like species and size, unless otherwise specified by the Owner in writing.

B. Water courses shall be reshaped to the original grade and cross-section unless specified or directed otherwise, and all debris removed. Where required to prevent erosion, the bottom and sides of the water course shall be protected.

C. Culverts destroyed or removed as a result of the remedial operations shall be replaced in like size and material and shall be replaced at the original location and grade, unless specified or directed otherwise. When there is minor damage to a culvert, and with the consent of the Engineer, a repair may be undertaken, if satisfactory results can be obtained at the approval of the Engineer.

D. Brick pavements encountered in the work shall be restored such that their final restored condition matches that of the pre-construction condition.

E. Stone or granite curbs outside the limits of excavation disrupted by this Project shall be removed, cleaned, stored, and reset to conditions matching existing in concert with pavement restoration activities in the disrupted areas. Care shall be taken in removing and handling curbing so as not to damage same. Provide 6-inch compacted subbase of Type C material for all reset curbing. For additional details, refer to Section 02772 – Granite Curb.

Stone curbing destroyed or missing as a result of the Contractor's operations shall be replaced with new stone curbing matching existing material in size, color, and texture, at no additional cost to the Owner.

F. Fences outside the limits of work destroyed or removed as a result of the construction operations shall be replaced in like size and material and shall be replaced at the original location, unless specified or directed otherwise.

3.07 MAINTENANCE

A. The finished products of restoration shall be maintained in an acceptable condition for and during a period of one year following the date of Substantial Completion or other such date as set forth elsewhere in the Contract Documents. Maintenance shall be performed at no additional cost to the Owner.

- END OF SECTION -

SECTION 02209 – SITE CLEARING

PART 1 – GENERAL

1.01 WORK SPECIFIED

A. Clearing and grubbing within the excavation and restoration limits indicated on the Drawings, including.

1. Topsoil (outside of excavation limits
2. Rocks
3. Trees
4. Bushes
5. Brush and scrub
6. Logs and stumps
7. Refuse and rubbish (on top of the ground surface)
8. Decayed and growing organic matter
9. Snow and ice

B. All suitable vegetative material shall be staged, crushed (or chipped), and if feasible, later used to stabilize wet excavated materials.

C. The Contractor shall remove, replace, support and protect all power and telephone poles and fencing as required by the utility companies, or as specified in Section 01760 – Protection of Existing and Installed Construction.

D. All railroad ties shall be segregated and disposed of in a manner to be determined.

1.02 SUBMITTALS

A. Contractor shall submit a description of the site clearing methods to be employed. Components of the site clearing which shall be specified include, but are not limited to, the following:

1. Copies of any permits required for clearing and disposal of materials.
2. Facility to be utilized for disposal of cleared material, including disposal site name, operating license, and validation of the permitted types of non-TSCA waste that can be received.
3. Open fires shall not be allowed.

SECTION 02209 – SITE CLEARING

PART 2 – PRODUCTS

2.01 QUALITY OF MATERIALS

A. New power and utility poles and the supporting and protecting of all poles and posts shall be in accordance with the requirements of the local power and telephone companies.

B. Stakes for tree protection shall be 2-inch diameter steel pipe or as shown on the Drawings.

PART 3 – EXECUTION

3.01 GENERAL

A. Tree Protection

1. Any tree which will not hinder construction or landscaping, and is designated to be saved, shall be protected by stakes placed in a circle having a radius of not less than 5 feet as measured from the base of the trunk around the tree. The stakes shall extend at least 4 feet above the existing ground. Each circle shall consist of at least 4 stakes. Any work within the circle shall be accomplished by hand unless otherwise permitted by the Engineer.

B. Groundwater Monitoring Wells

1. Existing groundwater monitoring wells designated on the Drawings shall be removed or protected and remain in place. Procedures for monitoring well removal or protection are provided in Section 02300 – Monitoring Well Protection and Abandonment.

3.02 ENVIRONMENTAL PROTECTION

A. Prohibited Construction Procedures

1. Prohibited construction procedures include, but are not limited to:

a. Dumping of spoil material into any 100-year flood hazard area, stream corridor, any wetlands, any surface waters or at unspecified locations.

b. Indiscriminate, arbitrary or capricious operation of equipment in any stream corridors, any wetlands or any surface waters.

c. Pumping of water from trenches or other excavations into any surface waters, any stream corridors or any wetlands. Pumped water must be collected and processed as specified in Section 13602 – Temporary Water Treatment System.

SECTION 02209 – SITE CLEARING

d. Damaging vegetation beyond the extent necessary for construction of the facilities.

e. Disposal of trees, brush, and other debris in any stream corridors, any wetlands, any surface waters or at unspecified locations.

f. Permanent or unspecified alteration of the flow line of the stream.

g. Placing of wet concrete so it comes in contact with stream water.

B. Site and Access Clearing

1. All trees that have been damaged by the Contractor shall be removed and replaced by the Contractor at its own expense, at no additional cost to the Owner. Replacement shall be with equivalent species and caliper.

2. Straggling roots and branches shall be pruned. Trees which must be pruned shall be cut cleanly.

C. Dust, Soil Erosion and Sediment Control

1. Sediment and erosion control measures shall be implemented as specified in Section 02260 – Dust, Soil Erosion and Sediment Control.

- END OF SECTION -

SECTION 02210 –TOPSOIL AND SEEDING

PART 1 – GENERAL

1.01 WORK SPECIFIED

A. The furnishing of labor, equipment, and materials necessary to place topsoil, seed, and mulch; the preparation of the subgrade and the placing of the topsoil, seed, and mulch.

B. The maintenance required until acceptance.

C. No fertilizers are to be used on this project.

1.02 REFERENCES

A. Applicable New Hampshire Department of Transportation (NHDOT) regulations

1.03 SUBMITTALS

A. The Contractor shall submit the location of source and data (including pH and organic content) for off-site topsoil.

B. Results of laboratory analytical testing for topsoil in accordance with Part 2.01 E.

C. Analysis of the seed, including botanical and common name, percentage by weight and percentages of purity, germination, and weed seed for each species.

D. Should a hydroseeder be used, the Contractor shall submit all data including material and application rates.

E. Manufacturer's information on erosion control netting including installation procedures.

PART 2 – PRODUCTS

2.01 MATERIALS

A. Topsoil shall be loam or sand loam free from clay lumps, stones, roots, sticks, stumps, brush, and foreign objects. Topsoil furnished shall have greater than 2 percent organic matter (not more than 20 percent), and a pH between 6 and 7. The mechanical analysis of the topsoil shall be as follows:

Passing	Retained On	Percent
1" screen	--	100
--	1/4" screen (gravel)	3 (max)
	No. 100 U55 Mesh sieve	40 to 60
	(very find sand, silt and clay)	40 to 60

SECTION 02210 –TOPSOIL AND SEEDING

B. Sod shall be strongly rooted sod, not less than 2 years old, free of weeds and undesirable native grasses, including Timothy, Orchard Grass, Sheep Fescue, Meadow Fescue, Canada Blue Grass, and Alta Fescue. Sod shall be machine-cut to pad thickness of ¾-inch (plus or minus ¼-inch), excluding top growth and thatch, and shall not have been stacked for more than 24 hours between the time of cutting and delivery to the site. Contractor shall provide only sod capable of vigorous growth and development when planted (viable, not dormant).

C. Seed shall be fresh, clean seed of the latest crop which meets the standards of the Federal Seed Act, including percent pure seed, percent germination, and percent weed content listed below. All seed shall be furnished in sealed standard containers of the vendor with each container showing name of vendor, weight, percent of each grass seed, percent pure seed, percent germination, percent weed content, date of seed crop, and date of test. Seed shall have the following analysis:

Percent by Weight	Kind of Seed
10.5	Kentucky Bluegrass, 98/80 – PA-free
17.5	Creeping Red Fescue (Canadian Origini)
13.0	Patriot Perennial Ryegrass
12.0	Annual Ryegrass
43.5	Kentucky 31 Tall Fescue

Seed which is wet, moldy, or otherwise damaged will not be acceptable.

D. Mulch shall be straw, free from deleterious materials, and suitable for top dressing of topsoil. Should a hydroseeder be used, mulch shall be a colored wood cellulose fiber product specifically designed for use as a hydro-mechanical applied mulch.

E. Special Circumstances

1. Any off-site materials brought on-site for use as topsoil or other backfill materials must be from a certified NHDOT source, and results of analytical testing for VOCs, SVOCs, PCBs, pesticides/herbicides and metals must be provided to the Engineer. The Engineer shall also collect samples from proposed off-site sources.

F. Any damage to materials, as specified herein, due to nonconformance with procedures and protocols that must be replaced due to negligence by Contractor, will be provided/ replaced at no additional cost to the Owner.

SECTION 02210 –TOPSOIL AND SEEDING

PART 3 – EXECUTION

3.01 INSTALLATION

A. The area to receive topsoil shall be graded to a depth of not less than 4 inches, or as specified, below the proposed finished surface. For lawns, if the depth of topsoil existing prior to construction was greater than 4 inches, the topsoil shall be replaced not less than the greater depth.

1. The surface shall be loosened for a depth of 2 inches prior to the placing of the topsoil and all debris and inorganic material shall be removed.

2. The topsoil shall not be placed until the subgrade is in suitable condition and shall be free of excessive moisture and frost.

3. All topsoil shall be free from stones, roots, sticks, and other foreign substances and shall not be placed in a frozen or muddy condition.

4. The finished surface shall conform to the lines and grades of the area before disturbed or as shown on the Drawings. Any irregularities shall be corrected before the placement of seed.

5. Place topsoil to a nominal depth of not less than 4 inches.

B. After the topsoil surface has been fine graded, the seed mixture shall be uniformly applied upon the prepared surface with a mechanical spreader at a rate of not less than five (5) pounds per 1,000 square feet.

1. The seed shall be raked lightly into the surface and rolled with a light hand lawn roller to incorporate seed into the uppermost ¼-inch of the topsoil.

2. Seeding and mulching shall not be done during windy weather.

C. The mulch shall be hand or machine spread to form a continuous blanket over the seed bed, approximately 2 inches uniform thickness at loose measurement. Excessive amounts or bunching of mulch will not be permitted.

1. Unless otherwise specified, mulch shall be left in place and allowed to disintegrate.

2. Any anchorage or mulch that has not disintegrated at time of first mowing shall be removed. Anchors may be removed or driven flush with ground surface.

D. Seeded areas shall be watered as often as required to obtain germination and to obtain and maintain a satisfactory sod growth. Watering shall be in such a manner as to prevent washing out of seed.

SECTION 02210 –TOPSOIL AND SEEDING

E. Hydroseeding may be accepted as an alternative method of applying seed and mulch. The Contractor must submit all data regarding materials and application rates to the Engineer for review.

F. Sod shall be placed within 24 hours from time of delivery. Contractor shall not plant dormant sod or if ground is frozen. Contractor shall lay sod to form a solid mass with tightly fitted joints. Contractor shall butt ends and sides of sod trips, not overlapping. Strips shall be staggered to offset joints in adjacent courses. Contractor to work from boards to avoid damage to subgrade or sod. Contractor shall tamp or roll lightly to ensure contact with subgrade. Contractor to work sifted soil into minor cracks between pieces of sod and remove excess to avoid smothering of adjacent grass.

1. Contractor shall anchor sod on slopes with wood pegs to prevent slippage.

2. Contractor shall water sod thoroughly with a fine spray immediately after planting.

3.02 MAINTENANCE

A. All erosion rills or gullies within the topsoil layer shall be filled with additional topsoil and graded smooth, and reseeded and mulched at no additional cost to the Owner.

B. The Contractor shall be responsible for repairs to all erosion of the seeded areas until at least 80 percent of the area of the new grass is firmly established and reaches a height of not less than 4 inches. All bare or poorly vegetated areas must be reseeded and mulched at no additional cost to Owner.

- END OF SECTION -

SECTION 02240 - CONSTRUCTION DEWATERING

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

A. This Section includes furnishing, maintaining, operating and removing temporary groundwater control systems as required to control groundwater levels during construction; to remove groundwater seepage into the Mill Street excavations from soil and/or bedrock below the excavation invert and from beneath Soldier Pile Tremie Concrete (SPTC) walls; to remove precipitation water that enters excavations; and preventing surface water from entering excavations.

B. The Contractor is responsible for designing and installing a groundwater control system it deems necessary to meet the minimum design and performance requirements specified herein and on the Contract Drawings. A temporary excavation support system consisting of a SPTC wall extending into bedrock is being installed around proposed Mill Street excavations for this contract. Toe pin holes beneath the SPTC walls will be pressure-grouted to reduce the hydraulic conductivity of bedrock, forming a grout curtain beneath the SPTC walls. Portions of the groundwater control system are to be installed inside the limits of this SPTC wall system. The temporary excavation support system and grout curtain will therefore serve as a groundwater cut-off through the pervious soil and bedrock present at the site. The Contractor shall coordinate the design of the groundwater control system with the installation of the temporary excavation support system and grout curtain installation.

C. As part of the work included under this contract, the Contractor shall install deep wells and wellpoints at the locations indicated on the Contract Drawings. Subject to approval of the Engineer, the Contractor may propose alternate layouts of deep wells, or replacement of deep wells with wellpoints. In addition, the Contractor shall install observation wells at indicated locations in order to allow monitoring of the performance of the dewatering systems.

D. The Contractor shall use whatever means and methods it deems necessary to prevent cross-contamination between the soil and bedrock due to drilling, well or wellpoint installation, and pumping of the groundwater control system, including wells, sumps and wellpoints. Such methods shall include, but not be limited to, sealing the deep well sumps with grout, as indicated in the Contract Drawings.

E. The Contractor shall discharge all dewatering effluent at the temporary water treatment system located adjacent to the Mill Street site. The discharge piping shall conform to the requirements of this specification and shall be pressure-tested according to ASME B31.3 Hydrostatic Testing Guidelines prior to commencing with dewatering and excavation in each excavation area. The Contractor shall operate the dewatering system such that the total discharge rate to this treatment system is no more than 150 gpm, which is the capacity of the temporary water treatment system.

F. Requirements for Liquid Handling and Treatment are provided elsewhere.

SECTION 02240 - CONSTRUCTION DEWATERING

1.02 REQUIREMENTS

A. Minimum Dewatering Requirements: Groundwater levels in the soil overburden materials and in bedrock for excavation work below the water table shall be lowered through a combination of deep wells and sumps, and wellpoints and perimeter drainage trenches if deemed necessary, inside the SPTC excavation support system. Only wellpoints shall be used outside of the SPTC excavation support system. The temporary excavation support system will be installed to serve as a continuous groundwater cut-off wall. While groundwater levels in the soil overburden will primarily be controlled with pumping wells and/or wellpoints, it is further anticipated that sumping and perimeter trenches for excavations that extend to, or near bedrock surface will be necessary to control groundwater seepage from bedrock. No deep wells shall be located outside the limits of the temporary excavation support system.

B. The Contractor shall retain the services of a specialty dewatering firm with a minimum 10 years of experience in design and installation, operation, and monitoring of groundwater control systems during construction.

C. The Contractor shall employ a registered professional engineer who will be responsible for finalizing the design of the dewatering system, supervising the deep well and/or wellpoint pumping performance evaluation, hydraulics testing, conducting mandatory site visits during the initial deep well or wellpoint operation, and reviewing the dewatering and monitoring systems at regular frequencies (at least twice monthly) and as requested by the Engineer. The Contractor's professional engineer shall collaborate with Engineer, and coordinate the design of the dewatering system with the location of the temporary excavation support system. The Contractor's professional engineer shall have a minimum of 10 years of relevant experience in designing similar dewatering systems as the one required for this project. A resume shall be furnished demonstrating the requisite experience.

D. Performance and Design Requirements:

1. The Contractor shall implement the minimum dewatering performance requirements as presented herein, and whatever measures it deems necessary to meet additional requirements listed below. As a minimum, the groundwater control system shall consist of a series of deep wells, wellpoints, perimeter trenches and sumps (as shown on the Drawings), and shall be installed at approximate locations shown on the Drawings, or as submitted to and approved by the Engineer.

2. Dewatering shall be performed to:

a. Lower the water table in the soil overburden to at least 3 ft below specified excavation invert grade, and sufficiently to ensure a relatively dry, workable subgrade, and to prevent heaving and hydrostatic uplift of the subgrade due to unbalanced pressures. Where excavations extend to bedrock, control groundwater so the water table does not rise above the top of the bedrock

surface. Groundwater levels shall be monitored in observation wells to evaluate drawdown performance. Minimum requirements and locations for construction phase observation wells are indicated on the Drawings.

b. Preserve the undisturbed characteristics of the subgrade soils to prevent uplift or heave of the subgrade or underlying soil strata. If requested by the Engineer, the Contractor shall excavate all unsuitable soils that become disturbed due to inadequate dewatering and replace the unsuitable soils with compacted fill, to the satisfaction of the Engineer and at no additional cost to the Owner.

c. Prevent any damage to adjacent structures, including utilities, whether existing or under construction, from settlement or other adverse effects resulting from water removal or dewatering methods. Water levels shall be monitored at least weekly in the observation wells installed outside the SPTC walls.

d. Prevent cross-contamination between soil and bedrock due to drilling, installation of wells, wellpoints, sumps and drainage trenches, and pumping of the groundwater control systems.

e. Control the total discharge rate of the dewatering system such that it does not exceed the capacity (150 gpm) of the temporary water treatment system. If higher discharge rates are encountered during construction during initial dewatering operation, and are believed to be necessary to achieve the required drawdown levels, the Contractor shall conduct investigations as necessary to determine if the higher than anticipated discharge rates are due to excessive seepage through the SPTC wall or through the bedrock below the wall. Once such investigations are completed, the Contractor shall propose and implement a remedial grouting program, as approved by the Engineer, to reduce discharge rates accordingly.

3. The Contractor shall provide water control measures to prevent surface water and water from temporary excavation support systems, trenches, and pipes associated with existing utilities, from entering the excavation.

4. The methods of controlling groundwater both inside and outside of excavations are to be based on the minimum requirements presented herein, as well as the results of the Contractor’s deep well and/or wellpoint pumping performance evaluation.

5. The Contractor shall provide backup power generation and groundwater control system components, and devise emergency procedures for maintaining continuous, uninterrupted groundwater control operations.

SECTION 02240 - CONSTRUCTION DEWATERING

6. The Contractor shall coordinate with all utility companies to verify all utility locations prior to commencing work.

7. The discharge from water removal or dewatering systems shall be made directly to the temporary water treatment system located adjacent to the Mill Street site, as indicated on the Drawings by means of dual-containment discharge piping. The Contractor shall perform hydraulic-testing of the discharge piping prior to dewatering and during the course of the project to confirm there are no exfiltration losses from the discharge piping. Conceptual locations for the discharge piping are shown on the Drawings. The Contractor may revise the layout as necessary to accommodate its construction operations.

8. No water shall be permitted to be discharged as overland flow.

9. All wells shall be developed as specified herein. Following development, and at all times during operation of the dewatering system, the fines content of the discharge shall be less than 5 ppm, determined using a Rossum Sand Content Tester or Imhoff cone, averaged based on at least three measurements. Discharge from each actively pumping well and wellpoint pump shall be monitored weekly to confirm that all discharge conforms with this performance requirement.

10. As the excavation progresses, the Contractor shall protect the well risers, well screens, wellpoints, discharge column and associated appurtenances, and arrange for water from the wells, wellpoints, and sumps to be pumped continuously to the discharge point via a dual-containment header pipe at surface grade. The wells must be protected from damage by construction equipment, and arrangements must be made to pump the water from excavation grade to the discharge point, via the header pipe.

1.03 EXISTING INFORMATION

A. Subsurface soil and groundwater conditions for this Contract and pumping test results have been compiled and are available for review with the Engineer. Drawings show locations of available existing geotechnical data, including test borings and observation wells.

1.04 SUBMITTALS

A. Qualifications and experience of specialty dewatering firm and registered professional engineer responsible for conducting the specified groundwater deep well and/or wellpoint pumping performance evaluation, and the design, installation and operation of dewatering systems.

B. The Contractor shall submit a Plan providing details on the means and methods of drilling and installing the proposed deep dewatering wells and wellpoints, details on the proposed well screen, filter pack, and materials proposed for the deep wells, wellpoints, and observation wells. In addition, details on the means,

methods, and schedule for the well development shall be included in this submittal. Additional items required in the submittal are listed below.

C. A description of equipment and materials to be used and the procedures to be followed in installation, operation and maintenance of groundwater control systems in relation to the proposed sequence of excavations, including means of hydraulic-testing the discharge pipes between the excavation areas and the temporary treatment system.

D. A description of standby equipment and standby power supply to be available throughout the duration of the project.

E. Methods for removing dewatering system elements, including methods used to ensure no significant ground movements will occur as a result of extraction that could adversely impact completed structures. If deemed necessary, describe locations of, or conditions under which dewatering system elements will be left in place, including level for cutting off, and method of tremie grouting.

F. Submit as-built drawings within 7 calendar days after the completion of groundwater control system installation for each component of the project.

G. The Contractor shall submit results of the deep well and/or wellpoint pumping performance evaluation to be initiated following the installation and operation of specified deep wells and/or wellpoints in each excavation area and monitoring of observation wells. Based on the results of the evaluation, the Contractor shall also submit any recommended modifications to the deep well and/or wellpoint system that are deemed necessary to achieve the performance and design requirements as specified herein with respect to controlling groundwater. If the maximum specified discharge rate is exceeded, the Contractor shall also submit plans for conducting investigations to determine the cause of the higher than anticipated discharge.

H. Arrangements, locations, and depths of proposed modifications to groundwater control system components.

I. Revised groundwater control system drawings to indicate changes made to accommodate field conditions and to comply with design criteria.

J. Geometry and installation methods and sequence of constructing the bedrock blanket grouting program.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Drilling Equipment: Subcontractor shall use standard drilling equipment, mounted on a truck, tracks, or skid, capable of installing the deep wells under site conditions at the planned time of installation. Under no circumstances shall use of any drilling fluids other than potable water or degradable polymer slurry be permitted. Drilling procedures shall not result in borehole smearing.

SECTION 02240 - CONSTRUCTION DEWATERING

B. Provide PVC Vee-Wire well screen (0.060-in. openings, 8-in. minimum inside diameter) by Johnson Screens, Inc., of St. Paul, MN, and Schedule 80 PVC riser and Schedule 80 PVC sump, in conformance with the Drawings.

C. Provide 1-1/2-in. diameter, self-jetting steel wellpoints with drawdown tubes according to the minimum requirements indicated on the Drawings. Provide swing connections for each wellpoint.

D. The submersible pumps to be installed in deep wells shall consist of Grundfos 4-in. Stainless Steel Submersible Pumps, Model 60S, or approved equal, capable of pumping 50 to 75 GPM at a total dynamic head of 50 to 100 ft or greater, and with sand handling capability.

E. Wellpoint pumps shall consist of Model CD100MV Dri-Prime Pump by Godwin or equivalent.

F. Discharge lines to route water from the excavation areas to the treatment plant shall consist of 4-in. diameter Asahi/America, Inc., Fluid-Lok high-density polyethylene (HDPE) dual containment pipe or approved equal.

G. The Drainage Stone to be installed for the perimeter drainage trenches and well sumps shall be 1/2-in. crushed stone or approved equal.

H. The filter fabric to be placed between the Drainage Stone and natural subgrade for sump and drainage trench installations(or deep wellscreen) shall be a Mirafi 140N, nonwoven geotextile fabric, or approved equal.

I. Provide Schedule 40 slotted PVC observation well screens with 0.010 in. openings and risers (2-in. minimum inside diameter) in conformance with the Observation Well Details on Drawings DW-7.

J. Filter sand to be used for both the wellpoints and the deep wells shall be #3 Morie sand or Engineer-approved equivalent. Filter sand to be used in the observation wells shall be #00 Morie sand, Ottawa sand, or Engineer-approved equivalent.

K. Granular bentonite shall be Enviroplug Medium, as manufactured by Wyo-Ben, Inc., Billings, MT, or Holeplug, as manufactured by Baroid Division, Petroleum Services, Inc., Houston, TX, or acceptable equivalent.

L. Temporary Materials and Equipment: Provide materials and equipment suitable for the intended purpose and adequate to reliably meet the design requirements.

PART 3 - EXECUTION

3.01 GROUNDWATER CONTROL

A. The Contractor shall field-verify and inspect all existing conditions, locations, sizes, dimensions, equipment, and obstacles prior to commencing work.

SECTION 02240 - CONSTRUCTION DEWATERING

Contractor shall notify the Owner in writing if existing conditions impact the work.

B. Contractor shall provide all necessary protection for site personnel during construction.

C. Following well installation, deep dewatering wells shall be developed in accordance with the reviewed submittal design. The wells shall be developed by pumping and surging, alternately jetting (with water or air) and pumping, or alternative method acceptable to the Engineer, until the water clears visibly and there is no visible evidence of suspended solids, including entrained soils and drilling fluids. Sands content in the water at the conclusion of well development and throughout well operation shall be less than 5 ppm, determined using a Rossum Sand Content Tester or Imhoff Cone, averaged based on at least three measurements. All discharge from the development and testing shall be routed through the temporary groundwater treatment system.

D. Wellpoints shall be installed using jetting installation methods, with a jetting chain required for development of a large enough annulus to allow installation of the specified filter material.

E. No pumping from any Phase 1 excavation dewatering systems shall be performed until the SPTC wall system, and toe pin drilling and grouting for that excavation has been completed.

F. Following well development, install submersible electric turbine pumps, motors, and appurtenances and discharge piping to the header pipe at current grades, including wellpoint system where applicable, and perform a deep well and/or wellpoint pumping performance evaluation. This test shall consist of pumping the dewatering system elements at maximum sustainable discharge rate or at 150 gpm, whichever is smaller, for a period of at least 48 hours, and monitoring of the adjacent observation well(s) within and outside of the SPTC wall-enclosed excavation limits. If it is judged that performance requirements cannot be satisfied at the end of this period, then stop the pumping and submit results of the tests. Develop appropriate modifications to the dewatering system and/or details of investigations to determine the cause of the higher than anticipated discharge rates, and submit proposed plans to Engineer for approval. If it is judged that the performance requirements can be satisfied at the end of this period, then continue pumping as required to satisfy the dewatering performance requirements.

G. Only wells and/or wellpoints within an individual SPTC wall-enclosed excavation area shall be pumping at any one given time to dewater the site and achieve the project objectives. The dewatering wells and sumps within an excavation area shall continue to operate during excavation and backfilling until such time that the required remediation has been accomplished to above the initial water table.

H. All SPTC wall-enclosed excavation areas except for Excavation Area 2 will require sumps (and perimeter drainage trenches if necessary) be installed after excavation has reached the bedrock surface in accordance with requirements

indicated on the Drawings. The deep wells may be used as sumps, or may continue operating as deep wells, and supplemental sumps shall be installed and operated as necessary. Locate sumps in areas of lowest bedrock topography.

I. Accomplish groundwater control in accordance with reviewed submittals. Keep the Engineer advised, in writing, of changes made to accommodate field conditions.

J. Perform groundwater control operations in a manner that will protect existing structures, and utilities. The Contractor shall be solely responsible for preventing damage to buildings or structures, and appurtenances, sewers, other utility installations, pavements, sidewalks, and other property that may result from Contractor's groundwater control operations.

K. The Engineer shall monitor the observation wells around and within the excavations in accordance with requirements of the Geotechnical Instrumentation program, to determine the extent of drawdown in the overburden inside and outside the excavations. Results of monitoring the observation wells indicated on the Drawings shall be provided to the Contractor on at least a weekly basis.

L. The Contractor is responsible for continuous control of water and safety of excavations at all times during the course of construction, including weekends and holidays and during periods of work stoppages. Method of dewatering operations shall be in compliance with all applicable federal, state, and local laws, regulations and requirements as well as federal, state and local discharge turbidity requirements, by whatever means necessary and in conformance with all applicable local and state regulations. All work of this Section shall comply with all applicable OSHA standards.

M. Divert surface runoff away from excavations. Surface water control measures, including dikes, ditches, sumps, and other methods shall be constructed to positively prevent flow of surface water into excavations, or onto roadways, or walkways.

3.02 FIELD QUALITY CONTROL

A. Tests:

1. Observation wells shall be monitored by the Engineer and the data shall be provided to the Contractor in accordance with requirements of the Geotechnical Instrumentation program.

2. Test fines content weekly in all discharge to confirm the sand content complies with the requirements detailed herein and solids are not being pumped, and submit data to the Engineer within 24 hours after it is obtained.

3. Refer to Specifications MP-13602 and MP-13605 for other dewatering effluent testing requirements.

SECTION 02240 - CONSTRUCTION DEWATERING

B. Inspection:

1. The Engineer will observe Contractor's compliance with dewatering specifications.

3.03 REMOVAL OF SYSTEMS

A. When groundwater control is completed, remove or grout in-place all elements of groundwater control systems to the extent practical. Restore points of entry to existing drainage facilities to pre-construction conditions.

B. The observation wells located within the limits of the excavation shall be monitored during the initial pumping of the dewatering wells and/or wellpoints and for as long as practical during excavation. As the excavation extends below the screen levels of the observation wells, they can be removed with approval from the Engineer.

C. All wellpoints shall be removed. Dewatering well casings and screens shall be cut-off at no more than 1 ft above bedrock surface, and tremie-grouted after they have served their purpose. If the project schedule allows, deep well materials that are deemed to be in serviceable condition following the completion of work in an excavation area may be re-used for deep wells or sumps in subsequent excavation areas.

END OF SECTION

SECTION 02260 – DUST, SOIL EROSION, AND SEDIMENTATION CONTROL

PART 1 – GENERAL

1.01 WORK SPECIFIED

A. The Contractor shall furnish all labor, materials, tools, and equipment, and perform all operations necessary for the construction and maintenance of temporary erosion control structures.

B. Implement and maintain dust and particulate control measures during construction of all Work under the Contract.

1.02 REFERENCES

A. Applicable Codes, Standards, and Specifications

1. Stormwater Management and Erosion Sediment Control for Urban and Developing Areas in New Hampshire.

2. Best Management Practice for Urban Stormwater Runoff.

3. American Society for Testing and Materials (ASTM).

4. American Association of State Highway and Transportation Officials (AASHTO).

5. Town of Milford *Stormwater Management and Erosion Control Regulations*, April 2007.

6. United States Environmental Protection Agency (USEPA) guidance for preparation of Stormwater Pollution Prevention Plans for Construction Activities (http://cfpub.epa.gov/npdes/stormwater/swppp.cfm).

1.03 SUBMITTALS

A. Stormwater Pollution Prevention Plan (SWPPP): The Contractor shall submit to the Engineer for review a site-specific SWPPP detailing methods to be used to prevent and control on-site dust generation and migration of stormwater during construction activities. The SWPPP shall at a minimum include the following:

1. Identify potential sources of stormwater pollution at the Site.

2. Describe practices to reduce pollutants in stormwater discharges from the Site through controlling stormwater runoff or providing on-site water treatment facilities in compliance with Section 13602 – Temporary Water Treatment System, as appropriate.

3. Identify procedures the Contractor will implement to comply with the substantive requirements of a construction general permit, including but not limited to:

   a) Best Management Practices (BMPs) for sediment and erosion control.

   b) BMPs for dust control.

   c) BMPs for stormwater management.

   d) BMPs for Site housekeeping to maintain Site controls.

   e) Inspection and maintenance procedures.

   f) Recordkeeping procedures.

4. Incorporate requirements of a Stormwater Management and Erosion Control Plan (SWMP) as specified in the Town of Milford *Stormwater Management and Erosion Control Regulations* (April 2007) not already described in the SWPPP.

B. Product data for proposed dust control.

C. Product data for all silt fencing, straw bales, silt curtains (if proposed), and any other erosion control materials.

1.04 PROJECT CONDITIONS

A. Earthmoving activities in the project area shall be conducted in such a manner as to prevent accelerated erosion and resulting sedimentation.

B. The Contractor shall install temporary erosion control structures, as shown on the Drawings, and as necessary to prevent accelerated erosion and sedimentation.

1.05 GENERAL METHODOLOGY

A. Erosion control structures installation shall consider all factors which contribute to erosion and sedimentation including, but not limited to, the following:

1. Topographic features of the project area.

2. Proposed alteration of the area.

3. Amount of run-off from and run-on to the project area.

4. Staging of earthmoving activities.

5. Temporary control measures and facilities needed during earthmoving activities.

B. Dust control measures shall consider all factors which contribute to control of airborne particulates including, but not limited to, the following:

1. Sequence of Work.

2. Methods of excavation and backfill.

3. Material storage.

4. Prevailing wind conditions (direction and velocity).

5. Moisture.

PART 2 – PRODUCTS

2.01 DESCRIPTION

A. Temporary Silt Fence

1. Silt fence fabric shall be manufactured by Nicolon Mirafi, Inc., Amoco Fabrics, Inc., or other approved manufacturer. The fabric shall be a woven fabric with less than 50% elongation (in accordance with ASTM D4632) and shall conform to the temporary silt fence requirements of AASHTO M-288-96, Section 8, summarized below:

Property	Test Method	Requirement
Grab Strength Machine Direction X-Machine Direction	ASTM D 4632	 >550 N >450 N
Permittivity	ASTM D 4491	>0.05 sec^{-1}
Apparent Opening Size	ASTM D 4751	<0.60 mm
Ultraviolet Stability (Retained Strength)	ASTM D 4355	70% after 500 hours of exposure

2. Steel or wood posts should be used for silt fence construction. The posts shall be minimum 36 inches long, and maximum post spacing for silt fencing shall be 8 feet. Pre-fabricated silt fence with attached wooden posts is acceptable provided the fabric meets the requirements.

SECTION 02260 – DUST, SOIL EROSION, AND SEDIMENTATION CONTROL

B. Staked Straw Bales

1. Shall be oats, wheat, rye grain, broomsage or other straw, or native grass hay.

2. Shall be sound with bale ties intact.

3. Shall be anchored in place with two re-bars, steel pickets, or 2" x 2" wooden stakes, a minimum length of 3 feet, driven 8 inches into the ground

PART 3 – EXECUTION

3.01 DUST, SOIL EROSION, AND SEDIMENT PREVENTION AND CONTROL

A. Implement and maintain dust and particulate control measures throughout the duration of construction and in accordance with the Contractor's accepted SWPPP. The Contractor shall maintain excavations, stockpiles, haul roads, permanent and temporary access roads, work site areas, spoil areas, borrow areas, and other work areas within or outside the project boundaries free from particulates which would cause the Federal, State, and local air pollution standards to be exceeded or which would cause a hazard or a nuisance.

B. Provide positive means to prevent airborne dust from dispersing into the atmosphere. Use only potable water if a water misting system is to be used for dust and particulate control.

For water application to soil surfaces during construction activities including, but not limited to, site clearing and grading, excavation, staging area development, and roadway construction, the Contractor shall:

- Apply water with equipment consisting of a tank, pump with discharge gauge, hoses, and mist nozzles.

- Locate tank and spraying equipment so that the entire excavation area can be misted without interfering with excavation equipment or operations. Keep areas damp without creating nuisance conditions such as ponding.

- Apply water spray in a manner to prevent movement of spray beyond the site boundaries.

C. Do not use chemical means for dust and particulate control without prior approval from the Engineer.

D. Use appropriate dust covers on trucks hauling fine or dusty material.

E. Prevent dust from becoming a nuisance to operations at the facility, or to adjacent property owners or occupants.

F. Ensure that open excavations and soil-covered backfilled areas are thoroughly wetted down at the end of each working day, unless precipitation is occurring, to prevent the generation of dust overnight. Additionally, apply hydromulch, wetting, or other method approved by the Engineer to open excavations and soil-covered backfilled areas before weekend work stoppage, or any other time when a particular work area will remain idle the following day.

G. Wet down haul routes as needed during work activities, and as needed during non-working time periods, to minimize dust generation.

H. Engineer may stop work at any time if Contractor's control of dusts and particulates is inadequate for the wind conditions present at the Site.

I. In the event that Contractor's control measures are not sufficient for controlling the release of dusts and particulates into the atmosphere, work shall be discontinued and a meeting held between Engineer and Contractor to discuss the procedures that Contractor proposes to use to resolve the cause. Make all necessary changes to operations prior to resuming any excavation, handling, processing, or any other work that may cause a release of dusts or particulates, at no additional cost to the Owner.

3.02 CONSTRUCTION SEQUENCE - EROSION CONTROL MEASURES

A. Construction of temporary erosion control measures along the perimeter of the area under construction shall be completed prior to initiating any site work that may result in disturbance of soil/sediment and subsequently in accelerated erosion and sedimentation.

B. All temporary erosion control measures shall be maintained throughout the course of the site construction activities in accordance with the Contractor’s site-specific SWPPP.

C. Engineer may request additional sediment and erosion controls be installed. The Contractor shall comply with the request and immediately install the required controls.

3.03 CONSTRUCTION METHODS

A. Silt fences and/or staked hay bales shall be installed at the Site as specified on the Drawings, in the SWPPP (to be prepared by the Contractor), and/or as required by the Engineer in the field.

B. On slopes, the Contractor shall provide protection against washouts.

C. Erosion control measures shall be maintained and left in-place until Owner or Engineer requests their removal.

- END OF SECTION -

SECTION 02270 – GEOTEXTILE FABRIC

PART 1 – GENERAL

1.01 WORK SPECIFIED

A. All labor, materials, equipment, and services necessary for furnishing and installing the woven geotextile fabric required for roads and for the clean materials/equipment pad as indicated on the Contract Drawings.

B. All labor, materials, equipment, and services necessary for furnishing and installing the nonwoven geotextile fabric of the material staging area(s), rip rap layers, or other areas requiring nonwoven geotextile.

1.02 SUBMITTALS

A. Manufacturer's data for geotextile including, at a minimum, product name, style number, physical properties, packaging, and installation techniques.

B. Manufacturer's Quality Assurance/Quality Control (QA/QC) program.

C. Certified results of all QC testing.

D. Contractor's proposed transportation, handling, storage, and installation techniques.

E. Work Plan discussing the materials and procedures to be used for placement of the geotextile as well as personnel qualifications to be installing such.

F. Manufacturer's standard warranty provided for the geotextiles.

G. Upon delivery, prior to installation, Installer shall verify in writing prior to installation that the geotextile fabric has not been damaged due to improper transportation, handling, or storage.

PART 2 – PRODUCTS

2.01 MATERIALS

A. Woven Geotextile

1. Mirafi 500X as manufactured by Mirafi, Inc. or approved equal.
2. Mirafi 600X as manufactured by Mirafi, Inc. or approved equal.

B. Nonwoven Geotextile

1. Mirafi 1100N as manufactured by Mirafi, Inc. or approved equal.
2. Mirafi 1160N as manufactured by Mirafi, Inc. or approved equal
3. Mirafi 140NL as manufactured by Mirafi, Inc. or approved equal.

SECTION 02270 – GEOTEXTILE FABRIC

C. Manufacturer Information

Mirafi Construction Products
365 South Holland Drive
Pendergrass, GA, USA 30567
www.mirafi.com

2.02 DELIVERY, STORAGE, AND HANDLING

A. The geotextile shall be furnished in a protective wrapping that shall be labeled with the following information: Manufacturer's name, product identification, lot number, roll number, and dimensions.

B. The geotextile shall be protected from ultraviolet light, precipitation, mud, soil, excessive dust, puncture, cutting and/or other damaging conditions prior to and during delivery and onsite storage at a location approved by the Owner's Representative. The geotextile shall be capable of withstanding 30 days of sunlight without measurable deterioration.

2.03 QUALITY ASSURANCE

A. The field-delivered material shall meet the specification values according to the manufacturer's specification sheet. The Contractor shall submit written certification that the delivered material meets the manufacturer's specifications. The Contractor shall provide the QC test results conducted by the manufacturer during the manufacturing of the geotextile fabric delivered to the project site. The Contractor shall also provide the lot and roll number for the material delivered to the Site.

B. The manufacturer shall have developed and shall adhere to its own QA program in the manufacture of the geotextile.

C. The Installer shall verify in writing prior to installation that the geotextile fabric has not been damaged due to improper transportation, handling, or storage. Only skilled workers who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and methods needed for proper performance of the Work described in this Section shall be utilized in geotextile activities.

D. The Contractor shall provide shop drawings indicating panel layouts and installation sequence for geotextile to be installed.

PART 3 – EXECUTION

3.01 INSTALLATION

A. Site Preparation

1. Prior to installation of the geotextile, placement surfaces shall be leveled and uniformly compacted, as necessary, to provide a stable smooth interface (no protrusions or depressions greater than ¼-inch and free of debris) for the geotextile.

SECTION 02270 – GEOTEXTILE FABRIC

The placement surface shall be certified and approved by the Engineer prior to installation activities.

B. Fabric Placement

1. The placement of geotextile shall not be conducted during adverse weather conditions. The geotextile shall be kept dry during storage and up to the time of deployment. During windy conditions, all geotextile shall be secured with sandbags or an equivalent anchoring system. Removal of the sandbags or equal shall only occur upon placement of an overlying layer.

2. Proper cutting tools shall be used to cut and size the geotextile materials.

3. During the placement of geotextiles, all dirt, dust, sand, and mud shall be kept off to prevent clogging.

4. The geotextile shall be covered within the time period recommended by the Manufacturer, and in no case later than two weeks after its placement.

5. For the access roads, the geotextile shall be laid in the direction of construction traffic.

C. Seaming and Repairing

1. Geotextiles shall be continuously sewn using a polymeric thread with chemical and ultraviolet resistance properties equal to or exceeding those of the geotextile.

2. All edges shall overlap 3 feet.

3. Repair of tears and holes in the geotextile shall require a patch made from the same geotextile that is sewn in place with a minimum 2-foot overlap.

3.02 POST-CONSTRUCTION

A. Upon completion of installation, the Contractor shall submit the following:

1. The warranty obtained from the Manufacturer/Fabricator.

- END OF SECTION -

SECTION 02280 – ROCK FILLED GABION RETAINING WALL

PART 1 - GENERAL

1.01 DESCRIPTION

A. Work Specified

1. This work shall consist of furnishing, assembling, and filling woven wire mesh gabions with rock as specified in the Contract to the dimensions, lines, and grades shown on the plans, or as determined by the Engineer. These Technical Specifications are in accordance with ASTM A975-97 and include rock-filled gabion baskets manufactured by Maccaferri Inc. or approved equal.

1.02 RELATED WORK SPECIFIED ELSEWHERE

A. Section 01160 – Survey Control

B. Section 02201 – Earthwork

C. Section 02270 – Geotextile Fabric

1.03 REFERENCES

A. APPLICABLE CODES, STANDARDS, AND SPECIFICATIONS

1. Codes and Standards

a. ASTM International (ASTM)

PART 2 - PRODUCTS

2.01 MATERIALS AND EQUIPMENT

A. Woven wire mesh:

1. All tests on the wire must be performed prior to manufacturing the mesh:

a. Tensile Strength: both the wire used for the manufacture of gabions and the lacing wire, shall have a maximum tensile strength of 75,000 psi, in accordance with ASTM A641/A641M-03.

b. Elongation: the test must be carried out on a sample at least 12 in. long. Elongation shall not be less than 12%, in accordance with ASTM A370-97a.

c. Zinc coating: minimum quantities of zinc according to ASTM A641/A641M-03, Class III soft temper coating.

d. Adhesion of zinc coating: the adhesion of the zinc coating to the wire shall be such that, when the wire is wrapped six turns around a mandrel having four times the diameter of the wire, it does not flake or crack when rubbing it with the bare fingers, in accordance with ASTM A641/A641M-03.

2. Galvanized (zinc coated) woven wire mesh gabions (8 x 10 mesh type):

a. Wire mesh: Diameter – 0.120 in.

b. Selvedge wire: Diameter – 0.153 in.

c. Mesh opening: Nominal Dimension, D = 3.25 in

3. Galvanized (zinc coated) lacing wire and internal stiffeners:

a. Lacing wire: Diameter – 0.087 in.

b. Cross tie/stiffener wire: Diameter – 0.087 in

c. Preformed Stiffener: Diameter – 0.153 in.

4. Steel Mesh Properties

a. Mesh Tensile Strength shall have a minimum strength of 3500 lb/ft when tested in accordance with ASTM A975 section 13.1.1

b. Punch Test Resistance shall have a minimum resistance of 6000 lb when tested in accordance with ASTM A975 section 13.1.4

c. Connection to selvedges shall have a minimum resistance of 1400 lb/ft when tested in accordance with ASTM A975.

5. Spenax Fasteners (Overlapping Fasteners): Overlapping fasteners may be used in lieu of, or to complement, lacing wire for basket assembly and installation. The

spacing of the fasteners during all phases of assembly and installation shall be in accordance with spacing based on 1400 lb/ft pull-apart resistance for galvanized mesh when tested in accordance with ASTM A975 section 13.1.2, with a nominal spacing of 4 in., and not to exceed 6 in.

a. Galvanized Fasteners: Diameter = 0.120 in., according to ASTM A313/A313M-98, Type 302, Class I.

b. Tensile Strength: 230,000 to 273,000 psi in accordance with ASTM A764-95(2001).

c. Proper Installation of Rings: A properly formed Spenax fastener shall have a nominal overlap of one (1) in. after closure.

6. Tolerances

a. Wire: Zinc coating, in accordance with ASTM A641/A641M-03, Class III soft temper coating

b. Gabion sizes: +/-5% on the hexagonal, double twisted wire mesh opening shall not exceed +/-10% on the nominal dimension values.

7. Standard Unit Sizes

Length (ft)	Width (ft)	Height (ft)	Number of Cells
6	3	3	2
9	3	3	3
12	3	3	4
4.5	3	3	1

To match the geometry of the planned gabion configuration, or to meet specific conditions panels shall be folded, cut, and/or re-tied to dimensions shown on the plans or as approved by the Engineer.

B. Fabrication

1. Gabions shall be manufactured and shipped with all components mechanically connected at the production facility. The front, base, and lid of the gabions shall

be woven into unit. The ends and diaphragm(s) shall be factory connected to the base. All perimeter edges of the mesh forming the basket and top, or lid, shall be selvedged with wire having a larger diameter.

The gabion is divided into cells by means of diaphragms positioned at approximately 3 ft. centers. The diaphragms shall be secured in position to the base so that no additional lacing is necessary at the jobsite.

C. Gabion Rock Fill

1. The rock for the gabions shall be hard, angular to round, durable and of such quality that they shall not disintegrate on exposure to water or weathering during the life of the structure. Gabion rocks shall range between 4 in. and 8 in. The range in sizes may allow for a variation of 5% oversize and/or 5% undersize rock, provided it is not placed on the gabion exposed surface. The size shall be such that a minimum of two layers of rock must be achieved when filling the gabions.

PART 3 - EXECUTION

3.01 Construction Requirements

A. Assembly: Gabions are supplied folded flat and packed in bundles. The units are assembled individually by erecting the sides, ends, and diaphragms, ensuring that all panels are in correct position, and the tops of all sides are aligned. The four corners shall be connected first, followed by the internal diaphragms to the outside walls. All connections should use lacing wire or fasteners as previously described above.

The procedure for using lacing wire consists of cutting a sufficient length of wire, and first looping and/or twisting to secure the lacing wire to the wire mesh. Proceed to lace with alternating double and single loops through every mesh opening approximately every 6 in. pulling each loop tight and finally securing the end of the lacing wire to the wire mesh by looping and/or twisting.

The use of fasteners shall be in accordance with the manufacturer’s recommendations as specified above.

B. After assembly, the gabion baskets are carried to their final position and are securely joined together along the vertical and top edges of their contact surfaces using the same connecting procedure(s) described above. Whenever a structure requires more than one layer, the upper empty baskets shall also be connected to the top of the lower layer along

the front and back edges of the contact surface using the same connecting procedures described above.

C. Filling: Baskets shall be filled with rock as specified above. During the filling operation some manual stone placement is required to minimize voids. It is also recommended to slightly overfill baskets by 1 to 2 in. to allow for settlement of the rock. The exposed faces of vertical structures may be carefully hand placed to give a neat, flat, and compact appearance. The cells shall be filled in stages so that local deformation may be avoided. That is, at no time shall any cell be filled to a depth exceeding 1 ft. higher than the adjoining cell. Behind gabion walls, compact the backfill material simultaneously to the same level as the filled gabions.

D. Internal Connecting Wires: Mac tie preformed stiffeners or lacing wire can be used as internal connecting wires when a structure requires more than one layer of gabions to be stacked on top of each other. Internal connecting wires with lacing wire shall connect the exposed face of a cell to the opposite side of the cell. Internal connecting preformed stiffeners shall connect the exposed face of a cell to the adjacent side of the cell. Preformed stiffeners are installed at 45 degrees to the face/side of the unit, extending an equal distance along each side being braced (approximately 1 ft.). An exposed face is any side of a gabion wall that will be exposed or unsupported after the structure is completed.

E. 3 Feet High Gabions: 3 ft. high gabions shall be filled in three layers, 1 ft. at a time. Connecting wires/bracings shall be installed after the placement of each layer, that is, at 1 ft. high and 2 ft. high.

F. Lid Closing: Once the gabion baskets are completely full, the lids are pulled tight until the lid meets the perimeter edges of the basket. A tool such as a lid closer can be used. The lid must be tightly laced and/or fastened along all edges, ends, and tops of diaphragm(s) in the same manner described above.

G. Mesh Cutting and Folding: Where directed by the Engineer, the basket mesh shall be cut, folded and fastened together to suit site conditions. The mesh must be cleanly cut and surplus mesh either folded back or overlapped so that it can be securely fastened together with lacing wire or fasteners in the manner described above. Any reshaped gabions shall be assembled, installed, filled and closed as specified in previous sections.

- END OF SECTION -

SECTION 02300 – MONITORING WELL PROTECTION AND ABANDONMENT

PART 1 – GENERAL

1.01 SCOPE OF WORK

A. The Contractor shall furnish all labor, materials, equipment, and incidentals necessary to perform well protection and well abandonment procedures as specified herein.

B. The Contractor shall furnish all labor, materials, equipment, and incidentals necessary for new well installations shown on the Drawings.

1.02 SUBMITTALS

A. The Contractor shall provide a written work plan of abandonment procedures which shall include but not be limited to the following items:

- Personnel to be utilized and respective responsibilities.
- Equipment to be utilized for various tasks described herein.
- Materials to be utilized for completion of abandonment tasks.
- Schedule of work including estimated dates and work hours.

B. At the conclusion of the work the Contractor shall provide a final report which shall include but not be limited to the following items:

- Well abandonment locations (coordinates) plotted on a map.
- Method of well casing removal.
- Casing removed or left in place, and reasoning if left in place.
- Depth, diameter, and material type of well casing.
- Depth to water.
- Well diagrams showing the depth of each well closure.
- Material and quantities used to abandon well.
- Air monitoring results.
- Firm and address completing the work.
- Signature of supervisor performing the work.

C. The Contractor shall submit a proposed plan for the installation of new wells shown on the Drawings in accordance with acceptable NH standards and requirements of the Engineer.

PART 2 – PRODUCTS

NOT USED

SECTION 02300 – MONITORING WELL PROTECTION AND ABANDONMENT

PART 3 – EXECUTION

3.01 SITE PREPARATION

A. The existing groundwater monitoring wells to remain in place or to be abandoned are designated on the Drawings.

B. Existing groundwater monitoring wells designated on the Drawings to remain in place shall be protected by stakes placed in a circle having a radius of not less than 5 feet as measured from the center of the monitoring well cover. The stakes shall extend at least 4 feet above the existing ground. Each circle shall consist of at least 4 stakes. Any work within the circle shall be accomplished by hand unless otherwise permitted by the Engineer.

C. The existing groundwater monitoring wells slated for abandonment (as designated on the Drawings) will be decommissioned following proper procedures and protocols in accordance with Federal, State, and Local regulations for overdrilling and grouting guidelines regarding well abandonment. All wells planned for decommissioning shall be at the discretion and approval of the Engineer.

D. The drill rig and downhole tools used for well abandonment shall be steam cleaned prior to beginning the work and upon completion of the work. Decontamination water shall be processed onsite according to Section 13602 – Temporary Water Treatment System.

3.02 ABANDONMENT PROCEDURES

A. Remove all existing well protectors and decontaminate via steam cleaning. Decontamination water shall be processed onsite according to Section 13602 – Temporary Water Treatment System. Metal well protectors shall be cleaned and placed in a scrap metal roll-off container designated by the owner or Engineer.

B. The preferred method of abandonment is to attempt to pull all casing and riser materials out of the hole. The riser material should be pulled in a “long” string, or in long increments. If a casing becomes lodged or breaks, jetting or some alternate means may be used to loosen the casing. For wells with 2-inch or less diameter risers, the existing well pipe shall be overdrilled with 4-¼-inch inside diameter hollow stern augers or equivalent. For wells with greater than 2-inch diameter risers, the existing well pipe shall be overdrilled with 6-inch inside diameter hollow stern augers or equivalent. All wells shall be drilled to a 1-foot minimum below the bore hole depth.

C. After all casing has been removed, the hollow-sterm augers shall be reinserted and rotated to the bottom of the borehole. All debris from the borehole shall be cleaned out to allow for a proper seal between the borehole wall and the grout. All auger cuttings and scrap contaminated casing shall be shall be placed in a roll-off container designated by the Engineer and ultimately disposed using the procedures in Section 13810 – Material Handling, Transport and Disposal.

D. Bore holes shall be tremie-grouted with cement/bentonite grout from the bottom to the ground surface.

E. After abandonment is accomplished, clean-up shall be performed. Any depressions created shall be backfilled and the area left clean.

F. If it is not possible to advance hollow stem auger to total depth at all locations, spinning casing may be required to reach total depth.

G. Well abandonment will proceed utilizing the most efficient method to obtain removal of the well screen and casing, if possible, and adequate closure of the well. Hollow stem augers will typically be used to overdrill shallow and intermediate depth monitoring wells. Spun casing will be employed, were necessary to advance to the bottom of the well screen interval. Overdrilled borings will be tremie grouted from the bottom up. In situations where overdrilling is not practical, the well will be pressure grouted in place.

H. If a monitoring well slated for abandonment is located within the proposed excavation limits and the depth of the well is entirely within the proposed excavation limits, the groundwater monitoring well may be removed mechanically concurrent with excavation activities at the discretion of the Contractor, with approval of the Engineer. The well materials shall be disposed with the excavated material in accordance with Section 13810 –Material Handling, Transport and Disposal.

3.03 AIR MONITORING

A. The contractor shall be responsible for monitoring the ambient air in the worker's breathing zone during field operations through the use of a PID analyzer or equivalent and documenting results.

- END OF SECTION -

SECTION 02370 - RIPRAP

PART 1 - GENERAL

1.01 WORK SPECIFIED

A. Furnish all labor, equipment, and materials, and perform all work necessary to place a protective covering of erosion-resistant riprap at locations shown on the Contract Drawings. The work shall be done in accordance with these Specifications and in conformity with the lines and grades shown on the plans or as determined by the Engineer.

1.02 RELATED DOCUMENTS

Other Specifications referenced in this Section include:

A. Section 02201 – Earthwork.

B. Section 02270 – Geotextile Fabric.

1.03 SUBMITTALS

A. Particle-size distribution of all proposed riprap types.

B. Proposed sources of riprap.

C. Samples and test reports of type materials. Test reports shall include, but not be limited to, gradation, soundness test, and chemical test reports for aggregate source characterization.

D. Laboratory analytical test results in accordance with Section 3.05C of Section 02201 – Earthwork.

PART 2 - PRODUCTS

2.01 RIPRAP

A. Stone used for riprap shall be hard; durable; angular in shape; resistant to weathering and water action; free from overburden, spoil, shale, and organic material; and shall meet the gradation requirements for the type specified on the Contract Drawings. Neither breadth nor thickness of a single stone should be less than one-third its length. Rounded stone or boulders shall be approved by the Engineer. Shale and stone with shale seams shall not be acceptable.

PART 3 - EXECUTION

3.01 PLACEMENT

A. Slopes, ditches, or pipe inlets/outlets to be protected by riprap shall be free of brush, topsoil, trees, stumps, and other objectionable material and shall be

dressed to a smooth surface. All soft or spongy material shall be removed and replaced with acceptable material and compacted to 85 percent maximum density, as specified in Section 02201 – Earthwork.

B. Stone for riprap shall be placed on the prepared slopes and surfaces in a manner that shall produce a reasonably well-graded mass of stone with the minimum practicable percentage of voids. The entire mass of stone shall be placed so as to be in conformance with the lines, grades, and thicknesses shown on the Drawings. Riprap shall be placed to its full course thickness in one operation and in such a manner as to avoid displacing the underlying material. Placing of riprap in layers, by dumping into chutes, or by similar methods likely to cause segregation shall not be permitted.

C. Where stone for riprap is placed on geotextile fabrics, the Contractor shall take necessary precautions to prevent tears in the fabric during placement.

D. The larger stones shall be well distributed. All material going into riprap protection shall be so placed and distributed such that there are no large accumulations of either the larger or smaller sizes of stone.

E. Hand placing or rearranging of individual stones by mechanical equipment may be required to the extent necessary to secure the results specified.

F. Unless otherwise approved by the Construction Manager, the riprap protection shall be placed in continuous progression with the construction of the embankment. Maintain the riprap protection until accepted, and any material displaced by any cause shall be replaced to the lines and grades shown on the Drawings, at no additional cost to the Owner.

G. Riprap shall be placed so that the dimension approximately equal to the layer thickness is perpendicular to the slope surface, and so that the weight of the stone is carried by the underlying material and not by the adjacent stones. On slopes, the largest stones shall be placed at the bottom of the slope. The riprap shall be properly aligned and placed so as to minimize void spaces between adjacent stones. The spaces between the stones shall be filled with spalls of suitable size.

- END OF SECTION -

SECTION 02400 - SOLDIER PILE AND TREMIE CONCRETE WALL CONSTRUCTION

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

A. Provide all labor, equipment, materials and services and performing all operations for the construction of Soldier Pile and Tremie Concrete (SPTC) wall, cast-in-place by the slurry trench excavation method (slurry walls) as indicated on the Drawings. The Contractor shall install timber lagging (or approved equal) above El. 254.

B. Provide all labor, equipment, materials, and services for performing all operations for installation of pressure grouted toe pins in the SPTC wall as indicated on the Drawings.

C. Construct the SPTC wall in accordance with the requirements of the Contract Documents and good engineering practice.

D. The Contractor shall protect adjacent buildings, property, streets, public utilities and structures, and completed work, from damage associated with SPTC wall construction operations.

E. The Contractor shall minimize the cross contamination of soil during slurry wall excavation

F. The Contractor shall minimize the slurry that is spilled onto the site outside of the slurry trench.

G. The Contractor shall expect to encounter remnants of abandoned utilities, foundations, walls, slabs, and other buried structures during excavation, including that for the SPTC wall.

H. Alternate temporary excavation support systems to those specified herein may be considered by the Engineer provided the Contractor can demonstrate through its submittals to the satisfaction of the Engineer that the proposed alternate system complies with the intent and criteria of these specifications.

I. Prior to or during construction of the guide walls, determine location of utilities. Protect, maintain, and/or relocate utilities interfering with the construction of the SPTC wall according to Drawings. Stage and schedule construction work for the SPTC wall in accordance with the planned relocation of the utilities.

J. Support and protect utilities if and as necessary. The Contractor shall be responsible for all damages to utilities caused by construction operations. Fully and promptly repair and/or restore all utilities which are damaged at no expense to the Owner, the City, or utility owner.

1.02 SUBMITTALS

A. Submit shop drawings and other information for the concrete guide walls to the Engineer a minimum of 4 weeks prior to starting their construction.

SECTION 02400 - SOLDIER PILE AND TREMIE CONCRETE WALL CONSTRUCTION

B. The Contractor shall submit documentation demonstrating that it has a minimum of 5 years' experience and five projects of similar scope and size of the type of work specified herein.

C. Submit shop drawings and all other information to the Engineer for the SPTC wall, including toe pin installation, a minimum of 4 weeks prior to the start of panel excavation. Information to include details of panel excavation and wall construction. Submittals shall be prepared and stamped by a professional engineer registered in the State of New Hampshire, retained by the Contractor.

D. SHOP DRAWINGS:

1. Shop drawings shall include:

a. Plan layout (scale 1 in. = 10 ft) of SPTC wall, showing the proposed location, length, bottom elevation, and identification number for each individual panel and solider pile. Also indicate the planned sequence of installation of panels and protection of utilities, if required.

b. Detail of the panel-to-panel joint connection, showing the geometry of the panel joint and the configuration of the end-stop.

E. Mix Design, Equipment, and Materials:

1. Concrete mix designs and supplies, as required in the Contract Documents.

2. Certificates for reinforcing steel and other steel members incorporated in the design.

3. Bentonite or polymer slurry mix, final conditioned slurry mix prior to concreting, and slurry reconditioning and processing equipment.

4. Description of all equipment to be used for construction of the SPTC wall, including staging areas, space requirements for operations, fabrication of reinforcing cages, and storage of materials.

F. Proposed Means and Methods:

1. Contractor's proposed method of continuous monitoring for plumbness and deviation of panels during excavation and details of corrective measures to be implemented as required.

2. Contractor's proposed method of maintaining stability of slurry-filled excavated trenches when trenches are left open overnight.

3. Contractor's proposed method of cleaning the bottom of the trench and joints of previously completed panels, sampling, and testing of bentonite slurry prior to tremie concreting, and verifying the depth of the panel.

4. Contractor’s proposed method to remove existing concrete structures or other obstructions that may be encountered within the wall alignment.

5. Contractor’s proposed means and methods to create a water tight joint between adjacent slurry wall panels.

6. Contractor’s proposed means and methods to prevent cross-contamination of soil during slurry wall excavation.

7. Contractor’s proposed means and methods to minimize the slurry that is spilled on the site during wall excavation. This may include grading the site towards the slurry trenches, placement of poly over the swing radius, letting slurry drain from the equipment prior to moving off the trench, etc.

G. As-Built Records: During SPTC wall construction, the Contractor shall maintain and submit to the Engineer as-built records of the Work. These panel as-built’s shall contain, as a minimum, the following:

1. Panel identification.

2. Plan dimensions of the excavation and elevations of guide walls, and top and bottom of panels.

3. Dates and times of panel excavation, slurry reconditioning, panel bottom cleaning, joint cleaning, characteristics of the slurry prior to concreting, reinforcing steel placement, tremie concreting, end-stop removal, and volume of concrete placed.

4. Description of soils encountered, description of obstructions and excavation problems, if any, and the time spent and treatment of the problem.

5. Details of geotechnical instrumentation installed in panel, if any.

6. Plumbness and deviation from plan location.

H. During SPTC wall construction, any unusual conditions encountered shall be noted and reported to the Engineer immediately.

I. Results of quality control tests performed on the bentonite slurry shall be made available to the Engineer.

J. The time period(s) for submittals are the minimum required by contract for the Engineer to review, evaluate, and respond to the Contractor. If, after review, the Engineer requires resubmission for any reason, the specified time period(s) shall

commence upon the date of receipt of the re-submittals. The Contractor is responsible for scheduling specified submittals and re-submittals so as to prevent delays in the work.

1.03 DEFINITIONS AND REFERENCE STANDARDS

A. ASTM: Specifications of the American Society for Testing and Materials latest edition
B. AREMA: American Railway Engineering and Maintenance-of-Way Association latest edition
C. AISC: Specifications of the American Institute of Steel Construction latest edition
D. API: American Petroleum Institute Standard latest edition
E. AWS: American Welding Society Codes and Standards latest edition
F. ACI: American Concrete Institute latest edition
G. USEPA: United States Environmental Protection Agency

1.04 DESIGN CRITERIA

A. The minimum required depth for the SPTC wall panels shall be 6 in. into sound bedrock. Sound bedrock shall be defined as an excavation rate equal to or less than 12 in./hour. The Contractor shall anticipate that use of a chisel or other methods will be required to achieve the required 6 in. of embedment into sound rock.

B. Bottom of SPTC wall elevation changes may be required during construction from those indicated on the Drawings due to subsurface conditions differing from those indicated in the test boring logs and assumed in design. Grade differences between the bottoms of adjacent panels shall be limited to 2.0 ft, unless otherwise reviewed and accepted by the Engineer to accommodate field conditions.

PART 2 - EXECUTION

2.01 STRUCTURAL STEEL

A. Structural steel for use in SPTC walls shall conform to the current edition of the ASIC Specification for the Design, Fabrication and Erection of Structural Steel for Buildings.

2.02 CONCRETE

A. The concrete mixes for use in SPTC walls shall conform to the following:

1. Minimum compressive strength of 1,000 psi at 28 days.

2. Maximum size aggregate shall not exceed 3/4-in. and the aggregate shall be well graded.

3. Fly ash, air entraining and plasticizers of a recognized type will be used to make the mix more workable.

4. Type II/III cement shall be used.

2.03 NON-SHRINK GROUT

A. The grout mix for the use in the toe pin shall have a minimum compressive strength of 4,000 psi at 28 days.

2.04 SLURRY EQUIPMENT

A. Slurry mixing and handling equipment shall consist of a high speed mixing plant, slurry storage tanks, pumps and flexible hoses capable of producing a stable homogenous mixture of bentonite clay and water.

2.05 SLURRY FLUID

A. Slurry fluid used to stabilize the SPTC wall panels shall consist of bentonite or polymer type slurries.

B. Water used for mix slurry fluids shall be clean, fresh, and free from oil, acid, alkali organic matter, and other deleterious substances.

C. Bentonite shall be the high swelling, pure, premium grade type, sodium action base bentonite consisting mainly of montmorillonite.

D. Polymer slurry used in the slurry fluid shall consist of a suspension of powdered polyacrylamide or vinyl polymer.

E. Slurry fluid shall conform to the following:

1. A stable solution of powdered or granular bentonite and water, mixed in a high-speed mixer, with a minimum concentration of 4.5 percent bentonite by weight.

2. pH of stabilizing fluid shall be controlled between 7 to 12.

3. Slurry fluid shall not be used before 8 hours after it is made, except where specifically permitted by the Engineer.

4. Viscosity of slurry shall be as required to provide a stable excavation but shall be a maximum of 40 seconds (Marsh Funnel Viscometer 946/1500 cc. sec.) prior to placement of concrete.

5. Specific gravity of stabilizing fluid shall be as required to provide stable trench conditions with a maximum value for fresh fluid of 1.09 (68 pcf) and a maximum value of 1.20 (75 pcf) at bottom of trench prior to concrete placement unless conditions dictate otherwise.

6. The sand content of the slurry shall be less than 5 percent prior to placement of concrete.

7. Prior to use in the slurry, acceptance for any additives must be obtained from the Engineer.

8. The filtrate loss for the slurry, as determined by a standard filter press test in accordance with API PP131B, Ninth Edition, May 1982, shall be less than 30 cubic centimeters.

9. The use of polymer slurry as an admixture in the bentonite slurry shall be submitted for approval to the Engineer prior to use.

10. The overall properties of the slurry shall be such that the slurry supports the side of the excavation and does not form an excessively thick filter cake.

PART 3 - EXECUTION

3.01 GENERAL REQUIREMENTS

A. Pre-excavate along the SPTC wall alignment to locate utilities, and expose and remove rubble, abandoned utilities, existing foundations, or other material which would obstruct the normal panel excavation procedure. The Contractor shall coordinate pre-trenching work to establish width, depth, and backfill criteria of the pre-trench to be compatible with slurry wall construction.

B. Construct concrete guide walls to the required elevation indicated on the Drawings.

C. Mobilize, furnish, and maintain equipment and supplies as necessary for the preparation, mixing, circulation, and storage in tanks of slurry fluid.

D. Minimize cross contamination of soil.

E. Minimize slurry spillage outside of slurry trench.

F. Conduct quality control testing on slurry fluid.

G. Excavate slurry-filled trenches through whatever material is encountered within the required limits and to required depths. Construct SPTC wall panels by displacing bentonite slurry with tremie concrete.

H. Take all necessary measures to prevent collapse of the excavated slurry trench.

I. Clean bottom of the slurry-filled excavated trench by means proposed by the Contractor and approved by the Engineer. Condition and desand slurry prior to steel and concrete placement.

J. Clean interior face of SPTC wall by scaling, raking, brushing, high pressure water jetting, and/or sand blasting as excavation proceeds. Clean wall to the satisfaction of the Owner and/or Engineer.

K. Contractor shall be responsible for providing a watertight wall system. The term "watertight" used here indicates that no seeping of water from the wall or formation of droplets on the wall surface shall be permitted and that only formation of moist areas which readily evaporate will be permitted. The Contractor shall repair, the inside face of the SPTC wall, and take other action as required, to make the wall watertight at panel joints, the base of the wall, and at other locations of leakage.

L. Employ construction methods and protective coverings which prevent the leakage or spillage of excavated materials, bentonite slurry, or concrete into utilities, adjacent properties, streets, sidewalks, or other facilities.

M. At the completion of the SPTC wall construction, all exterior surfaces of adjacent structures shall be restored to their pre-existing condition, if so required.

N. Install toe pins as required on the Drawings.

O. Removal of the SPTC wall from final grade down to El. 254.

P. Instrumentation to monitor wall movements will be incorporated in selected panels of the SPTC wall. Instrumentation will be monitored by the Contractor in accordance with Section 02015 Geotechnical Instrumentation and Monitoring.

3.02 EXCAVATION

A. Excavation equipment shall be capable of removing all fill, pretrenching backfill, lean concrete, soil, rock, and other materials required for excavation of the wall panels. Clamming, scraping, drilling, chiseling, or other methods acceptable to the Engineer shall be used.

B. Excavation of a panel shall proceed continuously from ground surface to 6 in. into sound bedrock. The trench bottom shall be cleaned free of all loose soil using methods acceptable to the Engineer, which shall include airlifting, using a smooth edged bucket, or other approved method.

C. All panels shall be concreted within 24 hours after excavation is completed, or sooner if instability is observed.

D. Panel excavations which remain open overnight prior to concreting shall be monitored by the Contractor by sounding the panel depth periodically to be sure no cave-ins or loss of ground has occurred. In the event that a cave in occurs, the Contractor shall be prepared to stabilize the excavation by backfilling the trench with on-site or other material.

E. In no instance will any excavated wall panel be allowed to remain open over a weekend.

F. The wall excavation by slurry-trench method shall be in individual panels along the lines shown on the Drawings and as specified herein, unless otherwise

acceptable to the Engineer. Excavation shall be completed using specialized excavating buckets, tools, chisels, and clean out equipment capable of excavating through the fill, natural soil deposits, and other materials at the site.

G. Secondary panel excavation shall not commence until adjacent primary panels are a minimum of 48 hours old. Excavation sequence shall not typically include running panels.

H. Panel shall be laid out such that panel joints are not located in corners.

I. Corners of the slurry wall shall be constructed monolithically to reduce the potential for corner collapse.

J. During excavation, each excavated panel shall be filled and maintained at all times with a stable suspension of slurry fluid. Excavation shall proceed through the slurry. Slurry shall be added to the excavated panel as necessary to maintain the slurry level within 1 ft of the top of the guide walls. Prior to concreting a panel, the slurry shall be circulated and cleaned to maintain uniformity and remove suspended and coarse material throughout its depth.

K. Panel excavation shall be performed without causing damage to existing structures and utilities which are to remain in place, or movement of same, and without movement or loss of ground.

3.03 PANEL EXCAVATION ADJACENT RAILROAD TRACKS

A. SPTC wall excavation within 20 ft adjacent to any portion of the railroad tracks shall be conducted in a carefully controlled manner and sequence to protect the tracks. Panel lengths and excavation depths shall be limited as indicated below:

1. In no case will a completed panel excavation be allowed to remain open overnight prior to concrete placement.

2. Panel lengths shall be submitted by the Contractor, and shall be such that they allow the panel construction to be started and completed as one continuous operation in one working day. In no case, however, shall panel lengths exceed 15 ft.

3. Panels which can not be completed within a single working day shall be backfilled with flow fill or other approved material.

4. If instability occurs during panel excavation, the Engineer shall be notified immediately and the excavation backfilled with approved material to stabilize the excavation.

3.04 PLACING CONCRETE AND STEEL

A. Prior to placing concrete and steel in the slurry-filled trench, the joints of adjacent previously installed panels shall be thoroughly cleaned to create a

watertight bond. In addition, the bottom of the slurry filled trench shall be cleaned of all loose material, and the slurry shall be desanded and reconditioned.

B. Steel shall be placed in panels within 4 hours after completion of panel cleaning and desanding.

C. End-stops shall consist of the soldier beams located in panel.

D. Soldier pile assemblies shall be accurately located and securely held in place prior to and during concreting. As the soldier piles are lowered into the slurry-filled trench, suitable guides and spacers, such as concrete skids, shall be used to maintain the required soldier pile spacing.

E. Concrete shall be placed in panels within 2 hours after placement of soldier piles, and shall proceed continuously until completion of the concreting.

F. Concrete shall be placed by tremie pipes, either by gravity flow or by pumping, in such a manner that the concrete displaces the slurry progressing from the bottom rising uniformly to the ground surface and such that intermixing of the concrete and slurry will not occur. The spacing of the tremie pipes shall not exceed 15 ft nor shall the tremie pipe(s) be further than 6 ft from the end of the panel. The tremie pipe shall have a minimum diameter of 12 in. Prior to concreting, the tremie pipe shall be placed 1 ft above the bottom of the excavation. The tremie pipe shall be suitably made to prevent mixing of the concrete and slurry and shall be of adequate size to permit the free flow of concrete. Initially, there shall be a suitable plug at the bottom of the tremie pipe, which will prevent discharge of concrete until the concrete head has at least reached the level of the slurry. Thereafter, a positive concrete head shall be maintained throughout. The basket or hopper at the top of the tremie that initially receives the concrete shall have a minimum capacity of one half cu. yd.

G. The bottom of the tremie pipe shall be embedded at least 10 ft into the concrete during placement, and this depth shall be maintained throughout the pour.

H. The concrete level during placement shall be kept essentially horizontal. Additional tremie pipes shall be employed if horizontal placement is not accomplished.

I. Concrete placement shall continue such that uncontaminated concrete is present up to El. 254. This will require the placement and removal of contaminated concrete above El. 254.

3.05 TOE PIN INSTALLATION AND PRESSURE GROUTING

A. Toe pins shall be installed and pressure grouted as indicated on Drawings.

3.06 QUALITY CONTROL

A. Testing of stabilizing fluid shall be performed by the Contractor with the results of every test submitted to the Engineer promptly after the test results are available.

1. Required Tests:

a. Viscosity (Marsh funnel viscometer 946/1500 cc. sec.)
b. Specific gravity
c. pH
d. Filter press test
e. Sand content

2. Testing Sequence (for each panel):

a. Viscosity, specific gravity, and sand content:
i During panel excavation (at least daily)
ii Completion of panel excavation
iii Immediately prior to installation of reinforcing and pouring concrete
iv After every rainfall
v As directed by the Engineer

b. pH:
i At completion of panel concreting
ii When viscosity is above specified limits
iii As directed by the Engineer

c. Filter press test:
i At least once every day
ii As directed by the Engineer

3.07 PERFORMANCE REQUIREMENTS AND TOLERANCES

A. SPTC wall construction shall be controlled by the following tolerances:

1. The verticality of the SPTC wall shall be measured during each panel excavation at intervals of depth not to exceed 20 ft. The overall out-of-plumb tolerance for the entire height of wall from top to bottom shall not exceed one percent of the height at any point along the wall.

2. Soldier piles shall be accurately located and securely held in place before and during placing and curing of concrete. The Contractor shall add all accessory steel to maintain the location of the soldier piles.

3. The SPTC wall shall be watertight with only the formation of minor moist areas on the wall surface. The Contractor shall repair, grout, patch, or otherwise render watertight, all wall areas in a manner acceptable to the Architect, at no additional cost to the Owner.

SECTION 02400 - SOLDIER PILE AND TREMIE CONCRETE WALL CONSTRUCTION

END OF SECTION

SECTION 02500 – STORM DRAINS

PART 1 - GENERAL

1.01 WORK SPECIFIED

A. Scope:

1. Furnish all labor, materials, equipment, and incidentals as shown, specified, and required to install storm sewer piping, manholes, catch basins and frames and grates or covers. The Work includes the following:

   a. Installation of storm sewer piping and drainage structures.

   b. Work on or affecting existing storm sewer piping or drainage structures.

   c. Installation of all jointing and gasket materials.

   d. Field quality control, including testing.

   e. Cleaning new and existing storm drains and drainage structures.

B. The quality of materials and performance of the Work shall be in accordance with the Infrastructure, Design, Construction and Administration Standards, Department of Public Works, Town of Milford, New Hampshire, dated April 2010 unless otherwise specified in this Section.

1.02 RELATED DOCUMENTS

A. Section 01410 – Town and Railroad Requirements

B. Section 02201 - Earthwork.

1.03 REFERENCES

A. Department of Public Works, Town of Milford, New Hampshire, “Infrastructure, Design, Construction and Administration Standards”, April 2010.

1.05 SUBMITTALS

A. Shop Drawings:

1. Laying schedules for concrete pipe (if concrete pipe is required by the Town of Milford DPW).

2. Details of piping, joints, penetrations and connections to other piping, structures and retaining walls.

3. Submit drawings showing design and construction details of all precast concrete and cast-in-place manholes and structures, including details of frames and grates or covers, joints between the manhole bases and riser sections and stubs or openings for the connections.

B. Product Data:

1. Manufacturer's literature and specifications, as applicable, for products specified in this Section.

C. Certificates:

1. Certificate signed by manufacturer of each product certifying that product conforms to applicable referenced standards.

D. Field Quality Control Submittals:

1. Results of each specified field quality control test.

E. Closeout Submittals: Submit the following:

1. Record Documentation:

a. Maintain accurate and up-to-date record documents showing modifications made in the field, in accordance with approved submittals, and other Contract modifications relative to buried piping Work. Submittal shall show actual location of all piping Work and appurtenances at same scale as the Drawings.

b. Show piping with elevations referenced to Project datum and dimensions from permanent structures. For each horizontal bend in piping, include dimensions to at least three permanent structures, when possible. For straight runs of piping provide offset dimensions as required to document piping location.

c. Include profile drawings with buried piping record documents when the Technical Drawings include piping profile drawings.

SECTION 02500 – STORM DRAINS

1.06 DELIVERY, STORAGE, AND HANDLING

A. Delivery:

1. Deliver materials to the Site to ensure uninterrupted progress of the Work.

2. Upon delivery inspect pipe and appurtenances for cracking, gouging, chipping, denting, and other damage and immediately remove from Site and replace with acceptable material.

B. Storage:

1. Store materials to allow convenient access for inspection and identification. Store material off ground using pallets, platforms, or other supports. Protect packaged materials from corrosion and deterioration.

C. Handling:

1. Handle pipe, fittings, specials, and accessories carefully in accordance with pipe manufacturer's recommendations and Town of Milford DPW Standards. Do not drop or roll material off trucks. Do not drop, roll or skid piping.

2. Avoid unnecessary handling of pipe.

3. Keep pipe interiors free from dirt and foreign matter.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Piping materials, drainage structures (manholes and catch basins), and frames and grates or covers shall be as specified in the Town of Milford DPW Standards.

PART 3 - EXECUTION

3.01 INSTALLATION

A. General:

1. Install piping and drainage structures as shown, specified, and in accordance with the Town of Milford DPW Standards.

2. In event of conflict between the Town of Milford DPW Standards and the Contract Documents, request interpretation from Engineer before proceeding.

3. The Engineer will observe excavations and bedding prior to laying pipe by Contractor. Notify Engineer in advance of excavating, bedding, pipe laying, and backfilling operations.

4. Excavation in excess of that required or shown, and that is not authorized by Engineer shall be filled at Contractor's expense with granular material furnished, placed, and compacted in accordance with Section 02201, Earthwork.

3.02 WORK AFFECTING EXISTING PIPING

A. Location of Existing Underground Facilities:

1. Locations of existing Underground Facilities shown on the Drawings should be considered approximate.

2. Determine the true location of existing Underground Facilities to which connections are to be made, crossed, and that could be disturbed, and determine location of Underground Facilities that could be disturbed during excavation and backfilling operations, or that may be affected by the Work.

B. Work on Existing Pipelines:

1. Cut existing piping as shown or required with equipment specifically designed for cutting pipelines, as applicable.

2. Install temporary plugs to prevent entry of mud, dirt, water, and debris into pipe.

3. Provide necessary sleeves, fittings, pipe, and appurtenances required to complete the Work.

3.03 FIELD QUALITY CONTROL

A. General:

1. Test storm sewer piping and manholes as required by the Town of Milford DPW. Provide all equipment, apparatus and services as required for testing including temporary bulkheads, bracing, and blocking.

2. Provide a minimum of one compaction test for backfill of each run of pipe between drainage structures.

3. Conduct all tests in presence of the Engineer.

SECTION 02500 – STORM DRAINS

3.04 CLEANING

A. Cleaning, General: Clean pipe systems as follows:

1. Thoroughly clean all new or existing piping and drainage structures, by flushing with water or in a manner approved by Engineer, prior to placing in service.

2. Dispose of materials from cleaning in accordance with Section 13810 – Material Transport and Off-Site Disposal.

- END OF SECTION -

SECTION 02645 - BITUMINOUS CONCRETE PAVEMENTS

PART 1 - GENERAL

1.01 WORK SPECIFIED

A. Construction of bituminous concrete pavement on a prepared base laid to the required grade, thickness, and cross-section as shown on the Contract Drawings or as specified in this Section.

B. Construction of bituminous (hot mix asphalt) sidewalks and curbs as shown on the Contract Drawings.

C. Providing pavement markings where shown or indicated.

D. The quality of materials and performance of the Work shall be in accordance with the Infrastructure, Design, Construction and Administration Standards, Department of Public Works, Town of Milford, New Hampshire, dated April 2010 unless otherwise specified in this Section or on the Technical Drawings.

1.02 RELATED DOCUMENTS

Other Specifications referenced in this Section include:

A. Section 02201 – Earthwork.

1.03 SUBMITTALS

A. Bituminous Concrete Pavement: Submit job mix data for each bituminous concrete mix to the Engineer in the format required by NHDOT Standard Specification Division 300 and Division 400. The job mix data must be approved by the Engineer prior to the start of paving operations.

B. Select Fill Materials:

1. Samples shall be obtained in accordance with ASTM D75 and submitted to the Engineer in 75-lb samples for each type of material.

2. Test results for sieve analysis of each select fill material performed in accordance with ASTM C36.

3. Results of analytical testing for VOCs, SVOCs, PCBs, pesticides/herbicides and metals.

1.04 REFERENCES

A. American Society for Testing and Materials (ASTM)

1. C136 - Sieve Analysis of Fine and Coarse Aggregates.

SECTION 02645 - BITUMINOUS CONCRETE PAVEMENTS

2. D75 - Sampling Aggregates.

3. D1557 – Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft^3).

4. D2167 - Standard Test Method for Density and Unit Weight of Soil in Place by the Rubber Balloon Method

5. D2922 - Tests for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).

B. Department of Public Works, Town of Milford, New Hampshire, "Infrastructure, Design, Construction and Administration Standards", April 2010.

C. New Hampshire Department of Transportation (NHDOT) "Standard Specifications for Road and Bridge Construction", August 2010.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Bituminous Concrete Products

1. Bituminous concrete material shall be as specified in the Town of Milford DPW Standards.

2. Bituminous curb shall be NHDOT Type B and conform to NHDOT Specification Section 609-2.4

3. Tack coats of asphalt emulsions shall conform to NHDOT Section 410.

B. Select Fill Materials

1. Select fill material for roadway pavement construction, Keyes Park Access Road parking area, and driveways shall be as specified in the Town of Milford DPW Standards unless otherwise specified on the Drawings.

C. Pavement Markings

1. Pavement marking paint shall have chlorinated rubber base.

2. Factory-mixed, quick-drying and non-bleeding, complying with FS TT-P-115, Type III.

SECTION 02645 - BITUMINOUS CONCRETE PAVEMENTS

PART 3 - EXECUTION

3.01 PAVEMENT INSTALLATION

A. General

1. Install pavement as shown on the Drawings and in accordance with the Town of Milford DPW Standards.

2. In event of conflict between the Town of Milford DPW Standards and the Contract Documents, request interpretation from Engineer before proceeding.

3. The thickness of the bituminous courses shall be as shown on the Drawings.

B. Testing

1. The finish pavement shall be to the grades and cross-section as shown on the Drawings.

   a. The surface tolerance shall not exceed 1/4 inch in 10 feet.

   b. There shall be no depressions which will retain standing water.

2. Variations exceeding 1/4 inch or depressions shall be satisfactorily corrected by milling and replacement of the top course.

3. Compaction testing will be performed in accordance with ASTM D1556, ASTM D1557, ASTM D2167 or ASTM D2922.

3.02 CURB INSTALLATION

A. Placement of Bituminous Concrete Curb

1. The area where the bituminous concrete curb is proposed to be placed shall be prepared by the application of a tack coat. The tack coat shall be applied to all surfaces where the curb will adjoin other bituminous pavement materials. Place adjoining asphalt within four hours of applying the Tack Coat.

2. Bituminous Concrete Curb shall be placed by means of a machine capable of producing the curb to the dimensions shown on the Drawings. The machine shall be self-propelled and produce curb of uniform shape, density, and texture and be integral with the shoulder's top pavement course.

3. Short sections of curb or sections with short radii may be formed by other means approved by the Engineer.

SECTION 02645 - BITUMINOUS CONCRETE PAVEMENTS

3.03 PAVEMENT MARKINGS

A. Pavement markings shall be placed on a clean pavement surface free of oil, dust, dirt, grease, and any foreign materials.

B. Do not begin marking bituminous concrete pavement until approved by Engineer.

C. Using mechanical equipment, provide uniform, straight edges in two separate coats. Apply in accordance with paint manufacturer's recommendations.

- END OF SECTION -

SECTION 02711 – GALVANIZED CHAIN LINK FENCE

PART 1 – GENERAL

1.01 WORK SPECIFIED

A. Repair of existing facility fence and/or providing and installation of new fence system as shown on the Contract Drawings and as specified herein.

1.02 REFERENCES

A. Toxic Substance Control Act (TSCA) – 40 Code of Federal Regulations (CFR) 761

B. American Society for Testing and Materials (ASTM)

1. A53 – Standard Specification for Pipe, Zinc-Coated (Galvanized)
2. A121 – Standard Specification for Zinc-Coated (Galvanized) Steel Barbed Wire
3. A123 – Standard Specification for Zinc Coatings on Iron and Steel Products
4. A153 – Standard Specification for Zinc Coating on Iron and Steel Hardware
5. A392 – Standard Specification for Zinc-Coated Steel Chain-Link Fence Fabric
6. F567 – Standard Practice for Installation of Chain-Link Fence

1.03 SUBMITTALS

A. Drawings, showing details of fence height, jersey barriers, size of post, rails, braces, gates, accessories, and grounding equipment.

B. Copies of the manufacturer's certification.

PART 2 – PRODUCTS

2.01 EXISTING ON-SITE MATERIALS

A. Existing galvanized chain-link fence present onsite shall be incorporated into the new fence system being installed as part of this work.

1. Existing fence located in an area of the site characterized by non-TSCA material as shown on the Contract Drawings shall be erected in a non-TSCA area of the Site and remain in the non-TSCA area of the Site at all times until Substantial Completion of the work, as approved by the Owner's Representative.

SECTION 02711 – GALVANIZED CHAIN LINK FENCE

2. Existing fence located in an area of the site characterized by TSCA material as shown on the Contract Drawings shall be erected in a TSCA area of the Site and remain in the TSCA area of the Site at all times until Substantial Completion of the work, as approved by the Owner's Representative.

B. Contractor shall inspect existing fence for signs of defect and make repairs as necessary, and as requested by the Owner's Representative, prior to use in the new fence system.

2.02 NEW MATERIALS

A. Structural and roll-formed shapes may be used in lieu of pipe sections. The structural or roll-formed shapes have a bending strength greater than the pipe section when measured under a 6-foot cantilever load and be galvanized in accordance with ASTM A123.

B. Posts, Rails, and Braces

1. Schedule 40, steel pipe, galvanized, in accordance with ASTM A53.

2. Dimensions and Weights (Minimum):

	Outside Dia. (In.)	Weight/ Ft (lbs)
End, Corner, and Pull Posts	2.875	5.79
Line Posts (Heavy Duty)	2.375	3.65
Top Rails and Braces	1.66	2.27
Gate Posts:		
Leaves 6 ft. Wide or Less	2.875	5.79
Leaves over 6 ft., including 13 ft. Wide	4.00	9.11

C. Chain Link Fabric

1. One piece 9 gauge steel wire fabric, width as shown on the Contract Drawings, 2-inch mesh galvanized after weaving in accordance with ASTM A392, Class 2.

2. Twisted and barbed at the top.

3. 7 feet high when installed.

4. Hedge Slats: Hedge slats shall consist of 6-mil rigid ultraviolet (U.V.) stabilized PVC with a center core of 18 gauge galvanized wire. Slats shall be sized to interweave inside the 2-inch mesh fence fabric.

D. Accessories

1. Barbed wire supporting arms, stretcher bars and bands, and hardware shall be galvanized in accordance with ASTM A153.

SECTION 02711 – GALVANIZED CHAIN LINK FENCE

2. Barbed wire supporting arms shall be of pressed steel or malleable iron, shall support three strands of barbed wire and have passage for top rail. Top most barbed wire shall be 12 inches above the top of the fabric.

3. Barbed wire shall be 2 strand, 12 ½ gauge steel wire, 14 gauge, 4 point round barbs spaced at 3 inches, galvanized in accordance with ASTM A121, Class 3.

4. Stretcher bars shall be a minimum of ½-inch x ¾-inch steel and attached to posts with heavy steel bands.

5. Tension wire shall be 7 gauge galvanized coil spring steel.

E. Gates

1. Gates shall be of the type shown on the Contract Drawings or as determined by the Engineer.

2. Welded fabrication shall be of not less than 1.90 inch O.D. Schedule 40 steel pipe.

   a. Braces and minimum ¾-inch diameter trusses to provide rigidity without sag or twist.

   b. Galvanized after fabrication in accordance with ASTM A123.

3. Locking devices, latches, stops, and other hardware as required for a complete operating gate.

   a. Operate from either side.

   b. Padlock shall be a high security padlock with precision 5-pin tumbler mechanism, 2-inch laminated steel case with resilient bumper, 7/16-inch diameter case hardened to allow steel shackle with dual steel levers that lock each shackle leg independently. The padlock shall be cadium rust-proofed and shall be furnished with six (6) like keys. Padlock shall be as manufactured by Master Lock Company or approved equal.

4. Three strands of barbed wire.

5. Fabric of gates shall be the same as chain link fence.

F. Miscellaneous

1. Concrete for footings shall be minimum 3,000 psi (at 28 days) mix.

2. Wire ties or clips shall be minimum of 6 gauge.

   a. Hog rings may be used to tie fabric to tension wire.

SECTION 02711 – GALVANIZED CHAIN LINK FENCE

PART 3 – EXECUTION

3.01 INSTALLATION

A. General

1. Installation shall be in accordance with ASTM F567, Installation of Chain-Link Fence, unless otherwise modified.

2. Installation shall be a 6-foot high fence set on posts set in a concrete jersey wall barrier for a portion of the fence, as shown on Contract Drawings.

B. Posts

1. Space line posts equidistant at intervals not exceeding 10 feet.

2. Post holes shall be of a diameter to provide not less than 4 inches of concrete outside the post and 3 inches below the bottom of the post.

3. Set plumb and to alignment in concrete base to a depth of:

   a. 36-inches for line post.

   b. 42-inches for pull, corner, and gate posts.

   c. Greater if recommended by fence manufacturer.

4. Crown concrete 2 inches above finish grade to shed water.

5. Concrete shall cure a minimum of 72 hours before further work is done on post.

C. Braces

1. Provide at all ends, gate and in both tangents at pull and corner posts.

D. Top Rails and Tension Wire

1. Attach top rail securely to each gate, corner, pull, and end posts.

   a. Support at each intermediate post to form a continuous brace from end to end.

2. Bottom tension wire shall be taut and 6 inches above finished grade.

SECTION 02711 – GALVANIZED CHAIN LINK FENCE

E. Fabric

1. Tighten to provide a smooth uniform appearance free from sags.

2. Attach to terminal post using stretcher bars with tension bands to maximum 14 inch intervals or other approved method.

3. Install fabric 2 inches above finished grade.

4. Fasten to line post at intervals not exceeding 14 inches.

5. Fasten to top rail, braces, and tension wire at intervals not exceeding 24 inches.

6. Along Elm Street, Keyes Drive, Mill Street, and a small portion of Cottage Street (and other areas where necessary), install green PVC hedge slats within fabric in accordance with Manufacturer's (Hoover Fence Co. or equal) specifications.

7. Interweave hedge slats throughout the fence fabric. Provide a smooth uniform appearance free from differing lengths.

F. Barbed Wire

1. Supporting arm installed angling out unless otherwise shown on the Contract Drawings.

2. Pull taut to remove all sags, firmly install at extension arms and secure to end and corner posts.

3. End and corner posts shall extend above fabric to receive barbed wire.

G. Gates

1. Install true to opening and plumb.

2. Adjust hardware for smooth operation.

H. The area shall be left neat and free of any debris caused by the erection of the fence.

3.02 REMOVAL

A. Remove and dispose perimeter fence at the time of Substantial Completion of the Work, as approved by the Owner's Representative.

1. Portions of the fence located in non-TSCA areas may be disposed at a solid waste facility as selected by the Contractor and approved by the Owner's Representative. A Subtitle D RCRA-permitted landfill shall be the minimum acceptable offsite solid waste disposal option.

SECTION 02711 – GALVANIZED CHAIN LINK FENCE

2. Portions of the fence located in TSCA areas shall be cut at a point two inches above the bottom of the fence or above any location where the fence may have contacted TSCA material.

   a. The bottom portion of the fence and portions of the fence which have come into contact with TSCA material shall be disposed at the TSCA-permitted facility selected for excavated TSCA material as described in Section 13810 – Excavated Material Offsite Transport and Disposal.

   b. Portions of the fence which have not come into contact with TSCA material shall be disposed at a solid waste facility as selected by the Contractor and approved by the Owner's Representative. A Subtitle D RCRA-permitted landfill shall be the minimum acceptable offsite solid waste disposal option.

- END OF SECTION -

SECTION 02772 – GRANITE CURB

PART 1 – GENERAL

1.01 WORK SPECIFIED

A. Providing and installing new granite curb or resetting existing granite curb as needed or as specified.

1.02 REFERENCES

A. New Hampshire Department of Transportation (NHDOT) Standard Specifications (2006) – Section 609.

1.03 SUBMITTALS

A. New Granite Curb – submit source of material for approval.

PART 2 – PRODUCTS

2.01 MATERIALS

A. Stone: Granite shall be tough, dense, sound and durable, of uniform light color, reasonably fine grained and free from seams, cracks or other structural defects.

B. Granite Curbs:

1. Match existing curb as to color, appearance and dimensions.

2. Furnish curbs with sawed top, split face and ends. Straight pieces shall be a minimum of 3 feet long. Curb segments on curves with radius of 100 feet or less shall be shaped to the required curvature, with the ends split on radial lines.

3. New curb segments shall not vary more than 2 inches for depth and 1 inch for width from the dimensions of the existing curb segments.

4. Top and front surfaces shall be true planes at right angles to each other, as seen with a straight edge. No projection greater than 3/4 inch or depression greater than 1/2 inch on the split surfaces will be acceptable. Top surface shall not vary more than 1/8 inch.

5. Drill holes will not be permitted in exposed curb surfaces.

C. Dry Concrete: One part Portland cement mixed with six parts NHDOT No. 89 coarse aggregate dry mix.

SECTION 02772 – GRANITE CURB

PART 3 – EXECUTION

3.01 INSTALLATION

A. Remove mortar and concrete from existing curbs to be reused.

B. Install curb bedding and backing in accordance with the granite curb detail as shown on NHDOT Standard Plan for Road and Bridge Construction No. CR-1.

C. Set curbs true to line and grade on a foundation of one cubic foot of dry concrete for each linear foot of curb installed. Fill voids to completely support entire length of curb.

D. Butt joint curb sections together.

E. Place a continuous concrete backing behind the curb. The minimum height of the concrete backing shall be 10 inches or to the top of the adjacent pavement, whichever is greater, as measured from the bottom of the curb.

- END OF SECTION -

SECTION 02811 – GUIDERAIL

PART 1 - GENERAL

1.01 WORK SPECIFIED

A. Installation of ironwood guiderail at the locations shown on the Drawings.

B. The quality of materials and performance of the Work shall be in accordance with the Infrastructure, Design, Construction and Administration Standards, Department of Public Works, Town of Milford, New Hampshire, dated April 2010 unless otherwise specified in this Section or on the Technical Drawings

1.02 SUBMITTALS

A. Shop Drawings: Show guiderail including joint and connection details and erection Drawings.

B. Manufacturer's certification showing product compliance with Town of Milford DPW Design Specifications.

1.03 REFERENCES

A. Department of Public Works, Town of Milford, New Hampshire, "Infrastructure, Design, Construction and Administration Standards", April 2010.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Guiderail posts, rails and hardware material shall be as specified in the Town of Milford DPW Standards.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Install guiderail where shown on the Drawings and in accordance with the manufacturer's recommendations and the Town of Milford DPW Standards.

B. In event of conflict between the Town of Milford DPW Standards and the Contract Documents, request interpretation from Engineer before proceeding.

- END OF SECTION -

SECTION 03001 – CONCRETE

PART 1 – GENERAL

1.01 DESCRIPTION

A. Scope:

1. Furnish all labor, materials, equipment, and incidentals as shown, specified, and required to furnish and install concrete, reinforcing, and related materials.

2. The Work includes:

a. Providing concrete consisting of portland cement, fine and coarse aggregates, water, and approved admixtures; combined, mixed, transported, placed, finished, and cured.

b. Fabricating and placing reinforcing, including ties and supports.

c. Design, erection, and removal of formwork.

d. Building into the concrete all sleeves, frames, anchorage devices, inserts, and other items required to be embedded in concrete.

B. The quality of materials and performance of the Work shall be in accordance with the Infrastructure, Design, Construction and Administration Standards, Department of Public Works, Town of Milford, New Hampshire, dated April 2010 unless otherwise specified in this Section or the Contract Drawings.

1.02 RELATED DOCUMENTS

A. Section 01410 – Town and Railroad Requirements

B. Section 02208 – Restoration of Surfaces

1.03 REFERENCES

A. Department of Public Works (DPW), Town of Milford, New Hampshire, “Infrastructure, Design, Construction and Administration Standards”, April 2010.

B. American Concrete Institute, ACI 301, Specifications for Structural Concrete for Buildings.

C. American Concrete Institute, ACI 347, Guide to Formwork for Concrete.

D. ASTM International, ASTM C31/C31M, Practice for Making and Curing Concrete Test Specimens in the Field.

SECTION 03001 – CONCRETE

E. ASTM International, ASTM C39/C39M, Test Method for Compressive Strength of Cylindrical Concrete Specimens.

F. ASTM International, ASTM C94/C94M, Specification for Ready-Mixed Concrete.

1.04 QUALITY ASSURANCE

A. Concrete work shall conform to all requirements of ACI 301 and ACI 347, except as modified by the Town of Milford DPW Standards.

B. Protection: Concrete reinforcement shall be stored in a manner to prevent excessive rusting and fouling with dirt, grease, and other bond breaking coatings.

1.05 SUBMITTALS

A. List of concrete materials and concrete mix designs proposed for use. Include results of tests performed to qualify the materials and to establish the mix designs.

B. Manufacturer's specifications with application and installation instructions for proprietary materials and items, including admixtures and bonding agents.

C. Informational Submittals: Submit the following:

1. Delivery Tickets: Copies of all delivery tickets for each load of concrete delivered to or mixed at the Site. Each delivery tickets shall contain the information in accordance with ASTM C94/C94M along with project identification name and number.

2. Site Quality Control Submittals:

a. Report of testing results for testing of field concrete cylinders for each required time period. Submit within 24 hours after completion of associated test. Test report shall include results of all testing required at time of sampling.

PART 2 – PRODUCTS

2.01 CONCRETE MATERIALS

A. Materials used for the production of concrete shall be as specified in the Town of Milford DPW Standards.

B. Reinforcing steel and welded wire fabric shall be as specified in the Town of Milford DPW Standards.

C. Form materials and accessories shall be as specified in the Town of Milford DPW Standards.

SECTION 03001 – CONCRETE

PART 3 – EXECUTION

3.01 GENERAL

A. The substrate and the conditions under which the Work will be performed shall be inspected by the Contractor. Notify Engineer in writing of unsatisfactory conditions. Do not proceed with the Work until unsatisfactory conditions are corrected.

B. Construct formwork, place reinforcing steel and concrete, cure and finish in accordance with the Town of Milford DPW Standards.

C. In event of conflict between the Town of Milford DPW Standards and the Contract Documents, request interpretation from Engineer before proceeding.

3.02 QUALITY OF CONCRETE WORK

A. Make concrete solid, compact, smooth, and free of laitance, cracks, and cold joints.

B. Concrete for liquid-retaining structures and concrete in contact with earth, water, or exposed directly to the elements shall be watertight.

C. Cut out and properly replace to extent directed by Engineer, or repair to satisfaction of Engineer, surfaces that contain cracks or voids, are unduly rough, or are in defective in any way. Patches or plastering are unacceptable.

D. Repair, removal and replacement of defective concrete directed by Engineer shall be at no additional cost to Owner.

3.03 FIELD QUALITY CONTROL

A. Site Testing Services:

1. The Contractor shall employ independent testing laboratory to perform field quality control testing for concrete. The Engineer will direct where samples are obtained.

2. Testing laboratory will provide all labor, material, and equipment required for sampling and testing concrete, including: scale, glass tray, cones, rods, molds, air tester, thermometer, and other incidentals required.

B. Quality Control Testing During Construction:

1. Perform sampling and testing for field quality control during concrete placing, as follows:

a. Slump: one test for each concrete load at point of discharge.

SECTION 03001 – CONCRETE

b. Concrete Temperature: one for every two concrete loads at point of discharge, and when a change in the concrete is observed. Test each load when time from batching to placement exceeds 75 minutes.

c. Air Content: one for every two concrete load at point of discharge, and when a change in the concrete is observed.

d. Compression Test Specimens:

   i) In accordance with ASTM C31/C31M, make one set of compression cylinders for each 50 cubic yards of concrete, or fraction thereof, of each mix design placed each day. Each set shall be four standard cylinders, unless otherwise directed by Engineer

   ii) Cast, store, and cure specimens in accordance with ASTM C31/C31M.

e. Compressive Strength Tests:

   i) In accordance with ASTM C39/C39M; one specimen tested at seven days, and three specimens tested at 28 days.

   ii) Concrete that does not comply with strength requirements will be considered as defective Work.

f. Submit test results from certified by testing laboratory to ENGINEER within 24 hours of completion of test.

- END OF SECTION -

SECTION 13602 – TEMPORARY WATER TREATMENT SYSTEM

PART 1 – GENERAL

1.01 DESCRIPTION

A. Work Specified

1. The Contractor shall furnish all labor, equipment, and materials, and execute all activities necessary to collect, handle, containerize, treat and discharge all liquids generated during work performed under this contract requiring treatment. Liquids that must be handled and discharged include, but are not limited to:

   a. Rainfall runoff which accumulates in excavation or containment areas.

   b. Direct precipitation in excavation or containment areas.

   c. Water generated from dewatering activities.

   d. Water generated from equipment and personnel cleaning activities.

   e. Groundwater/surface water encountered during remedial activities (including within abandoned structures [e.g., pipes, underground storage tanks, etc.]).

   f. Other water generated as a result of remedial activities.

2. The Contractor shall furnish all labor, equipment and materials and execute all activities necessary to provide power, operate, and maintain a temporary water treatment system. The temporary water treatment system specified herein is a typical temporary water treatment system that was designed based on sound, industry-accepted design principles and consists of proven treatment technologies and configurations. Although the temporary water treatment system specified herein is comprehensive, it is not necessarily meant to represent the final water treatment system that shall be designed, implemented, and maintained by the Contractor. Instead, the Contractor shall be given the opportunity to propose an alternate water treatment system design that at a minimum shall meet the performance standards (e.g., Souhegan River discharge limits) and design, construction, and operational intent established herein. The temporary water treatment system shall typically include the following major components:

   a. Berms and containment

   b. Influent storage tanks

   c. Influent settling tanks

   d. Oil/water separator

   e. Oil storage drum

   f. Solids holding tank

g. Centrifugal transfer pumps

h. Double-diaphragm pumps

i. Chemical injection system

j. Multi-media filter system

k. Organoclay system

l. Liquid-phase granular activated carbon (GAC) vessels

m. Bag filters

n. Effluent storage tanks

o. Piping and appurtenances

p. Flow meters

q. Level transmitters

r. Level switches

s. Pressure gauges

t. Air compressor

1.02 SUBMITTALS

The Contractor shall provide the following information pertaining to the temporary onsite water treatment system to the Engineer for their review:

Shop Drawings

The Contractor shall prepare and submit shop drawings for each component of the water treatment system that presents the following information:

- Drawings showing location of equipment, elevations, devices, line sizes, valving, utility (air, water, drain, electric) line sizes, and connections.
- Vessel shop or fabrication drawings with all dimensions indicated. Include identification and catalog cuts for purchased components and details for manufactured components.
- Applicable certifications and ratings.

- Detailed drawings illustrating equipment arrangement, bill of materials, weights (dry and operating), and plan view system drawing.

- Elementary control diagrams.

Operation & Maintenance (O&M) Manual

The Contractor shall prepare and submit the O&M Manual for the temporary water treatment system that includes a general narrative detailing the Contractor's O&M activities. The O&M Manual shall include the following information (as applicable) for each major system component:

- Start-up testing, normal (daily) operations, trouble shooting, and shut down procedures.

- Preventative or routine maintenance requirements.

- Sampling plan, including schedule.

- Recommended spare parts list.

- Calibration and alignment information.

- Manufacturer's O&M Manuals.

PART 2 – PRODUCTS

2.01 GENERAL

This section specifies the minimum design and construction requirements for major treatment system components. Substitutions of system components other than those specified herein shall be considered by the Engineer in accordance with the requirements of the Contract Document. The Contractor shall not modify equipment in the field without written approval from the manufacturer.

2.02 BERMS AND CONTAINMENT

A. The Contractor shall construct a containment area for the temporary water treatment system. The containment area shall be constructed in accordance with the Contract Drawings and the Contractor's submittals which are subject to review by the Engineer. The temporary water treatment system containment area shall be constructed as indicated on the Contract Drawings and, at a minimum, shall meet the following requirements:

- The area to be used to stage the temporary water treatment system shall be graded and sloped to a low point to form a collection sump.

- A minimum 8-inch high berm shall be constructed of gravel, or approved equal, along the perimeter of the temporary water treatment system containment area necessary to provide secondary containment equal to a minimum of 110% of one

storage tank for the temporary water treatment system (approximately 23,100 gallons), and a one-year, 24-hour storm event of approximately 2.5 inches.

- The containment area shall be lined with a layer of reinforced and textured 40-mil high density polyethylene (HDPE) liner. The liner shall be installed continuously along the bottom of the containment area and sloped to a HDPE-lined sump to allow for collection of liquids. If more than one HDPE panel is required in the containment area, the panels shall have a minimum 4-foot overlap with the exposed (overlapping) edge pointed downslope towards the sump. The liner shall be extended over the top and outside face of the berm. The outside face of the liner shall be adequately secured.

- In order to protect the integrity of the liner, two layers of non-woven geotextile fabric shall be installed between the liner and the ground surface. In addition, approximate 12-inches of gravel crushed stone (NHDOT#89 Fill) shall be installed on top of the HDPE liner to act as a working surface that protects the liner from equipment and material movement and also provide a non-slip surface for working personnel.

B. The Contractor shall not involve any equipment or procedures that may jeopardize the integrity of the HDPE liner.

C. The Contractor shall pump liquids that accumulate within the sump to the influent storage tanks of the temporary water treatment system. The Contractor should take precautions to minimize the amount of solids transferred to the treatment system.

D. The containment area shall be inspected daily (when operating personnel are onsite) and any noted deficiencies shall be promptly corrected.

E. A temporary vehicle access ramp(s) shall be constructed of gravel, as needed. However, the ramp(s) shall not extend into Mill Street, including residential driveways.

2.03 TEMPORARY ENCLOSURES FOR TREATMENT SYSTEM

Construction activities are anticipated to be conducted during a non-winter construction period and, therefore, temporary water treatment system enclosures are not anticipated for thermal protection. However, temporary equipment enclosures or equipment selection shall be required to maintain decibel levels of less than 65 for night time operation and 80 day time.

2.04 INFLUENT SETTLING TANKS (T-001 and T-002)

A. The tanks shall be a 20,000 gallon Flip Top Weir Tank, provided by BakerCorp, or approved equal.

B. The influent settling tanks shall be of steel construction. The tanks shall have closeable tops which allow the water level in the tank to be determined by visual inspection and the use of a stick level indicator. The minimum total influent settling storage capacity shall be 40,000 gallons.

C. Each tank shall be furnished with an inlet and outlet pipe connection.

D. Each tank shall be furnished with over and under weirs to induce settling of solids and capture of floatables.

E. The influent settling tanks shall contain a high level switch with a local and panel alarm indicator.

2.05 INFLUENT STORAGE TANKS (T-100, T-110, T-120, AND T-130)

A. The tank shall be a 21,000 gallon Modern Fixed Axle Tank (V-Bottom Version), provided by BakerCorp, or approved equal.

B. The influent storage tanks shall be of steel construction. The tanks shall have closeable tops which allow the water level in the tank to be determined by visual inspection and the use of a stick level indicator. The minimum total influent storage capacity shall be 84,000 gallons.

C. Each tank shall be furnished with an inlet and outlet pipe connection. The tank shall be equipped with a “v” shaped bottom to collect residual liquid.

D. The influent tanks shall contain a high level switch with a local and panel alarm indicator.

2.06 OIL/WATER SEPARATOR (T-200)

A. The oil/water separator shall be model TS080 carbon steel, or equivalent, as manufactured by Hydro-Flo Technologies, Inc., or approved equal.

B. The oil/water separator shall be a gravity-type rectangular channel coalescing oil/water separator capable of removing gross free oil and similar floatable products and shall contain integral collection chambers for settleable sludge/solids recovery.

C. The oil/water separator shall have an adjustable oil skimming assembly and an oil collection chamber.

D. The oil/water separator shall be designed in accordance with Stokes Law and the American Petroleum Institute Publication 421, "Monographs on Refinery Environmental Control Management of Water Discharges, Design and Operation of Oil-Water Separators" and Stokes Law for an influent water flow rate up to 200 gallons per minute (gpm).

2.07 OIL STORAGE DRUM (T-210)

A. The oil storage drum shall be a 55-gallon drum to contain oil from the oil water separator.

B. The oil storage drum shall be of steel construction with a 2-inch bung closure.

C. The oil storage drum shall be placed on a spill containment pallet with a minimum 60 gallon capacity.

SECTION 13602 – TEMPORARY WATER TREATMENT SYSTEM

2.08 SOLIDS HOLDING TANK (T-230)

A. The solids holding tank shall be model ICB 4200 with ICS 4200 stand as manufactured by Assman Corporation of America, or approved equal.

B. The solids holding tank shall be a 4,200 gallon crosslink polyethylene tank with a 30-degree conical bottom to contain solids from the oil water separator and influent storage tanks.

C. The solids holding tank shall be manufactured of one-piece, seamless, crosslink polyethylene which is translucent for viewing of interior water levels.

D. The solids holding tank shall be equipped with four side wall 2-inch bolt on flanged fittings for decanting, one top 2-inch bolt on flanged fitting for fill, one bottom 2-inch bolt on flanged fitting for pump connection, one 3-inch top U vent, and one header with five union ended ball valves as decanting header for tank.

E. The solids holding tank shall be equipped with a stilling well. The stilling well shall consist of a center mounted 6-inch polyvinyl chloride (PVC) stilling well with one 3-inch sludge feed connection.

2.09 CENTRIFUGAL TRANSFER PUMPS (P-120A, P-120B, P-310A, P-310B, P-960A, and P-960B)

A. The transfer pumps shall be model 3657, as manufactured by Goulds Pumps, or approved equal.

B. The transfer pumps shall be end-suction centrifugal pumps of stainless steel construction and rated for a pumping rate of 150 gpm (maximum allowable throughput to the temporary water treatment system) at a pumping head to be determined by the Contractor. Each transfer pump shall have an installed spare.

C. The pump motors shall be non-overloading of National Electrical Manufacturers Association (NEMA) standard design suitable for horizontal overhung pump mounting.

2.10 DOUBLE DIAPHRAGM SOLIDS PUMPS (P-200, P-220 and P-240)

A. The double diaphragm pumps shall be model P8 Metal Pump, as manufactured by Wilden Pumps, or approved equal.

B. The double diaphragm pumps shall be rated for a pumping rate of 75 gpm at a pumping head to be determined by the Contractor.

2.11 CONTAINMENT AREA SUMP PUMP (P-100)

A. The sump pump shall be model 3886 or equal, as manufactured by Goulds, or approved equal.

B. The pump shall be rated for a pumping rate of 100 gpm at a pumping head to be determined by the Contractor.

C. The pump shall be of cast iron construction.

2.12 CHEMICAL INJECTION SYSTEM

A. A chemical injection system shall be provided to promote flocculation for enhanced removal of TSS. Particulate size distribution analysis was performed on the influent and treated groundwater during water treatment activities associated with the pump test activities of 2012. Results from this analysis indicated that a large percentage of suspended solids present in the groundwater were smaller than 0.5 micron in size. Therefore, a chemical injection system will be necessary to promote coagulation of these sub-micron particles into larger suspended particles which can be more easily removed via downstream filtration.

B. The chemical injection system shall consist of a chemical drum or tote, metering pump, and in-line static mixer.

C. The frequency of the metering pump shall be controlled based on the flow rate of the treatment system. Control of the metering pump shall be by way of a 4-20mA signal.

2.13 MULTI-MEDIA FILTERS (MM-400)

A. The multi-media filters shall be model MM3660-3A, as manufactured by Yardney Water Management Systems, Inc., or approved equal.

B. The multi-media filter system shall be self-backwashing and have a loaded hydraulic capacity of 150 gpm. The multi-media filter shall be pressure rated to a maximum 100 pounds per square inch (psi).

2.14 ORGANO-CLAY VESSELS (O-500, O-510)

A. Organo-clay vessels shall be model CL-2000 manufactured by Tigg Corporation or approved equal.

B. Organo-clay vessels shall be skid mounted, 48” in diameter, each with a hydraulic capacity of 100 gpm and rated for a working pressure of 75 psi.

C. Each organo-clay vessel shall be filled with 3,000 lbs of Tigg OMC organo-clay media or approved equal for removal of separate-phase and emulsified oils.

D. Organo-clay vessels shall be piped in parallel and valved separately to allow one vessel to remain in service as the second is backwashed.

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2.15 LIQUID-PHASE GAC VESSELS (C-600, C-610, C-700, and C-710)

A. The GAC units shall be Siemens PV 5000 or equal. Each unit shall be filled with 5,000 lbs of Westates AquacarbTM 830 or AquacarbTM 1240 carbon as supplied by Siemens or approved equal.

B. The GAC vessels shall be skid-mounted and have a loaded hydraulic capacity of 75 gpm each. Flow shall be split evenly between two treatment trains and each treatment train shall have two units in series. Each vessel shall be cylindrical containing a minimum of 5,000 pounds of carbon.

C. The vessels shall be designed for a downflow application, a carbon dryfill opening in the top and a carbon discharge connection in the unit bottom. All vessel fittings shall be installed by the GAC vessel manufacturer at the time and place of manufacturer.

D. The water shall have a minimum empty bed contact time of 15 minutes per vessel at 75 gpm.

E. All water shall be routed through the GAC vessels in series during normal treatment system operations. When the primary GAC vessel becomes spent (breakthrough of constituents above permitted limits), a carbon change-out of the primary vessel shall occur. The secondary vessel shall be moved to the primary position and a new GAC vessel shall be placed in the secondary position.

2.16 BAG FILTERS (BF-800, BF-810, BF-820 and BF-830)

A. Bag filter shall be as manufactured by Filtration Systems, or approved equal.

B. Each bag filter system shall be equipped with bag filter housings, bag support baskets, legs, interconnecting piping, shutoff valves, sample taps (at inlet and outlet of each housing) and pressure gauges (at inlet and outlet of each housing).

C. Each bag filter system shall be sized for a nominal flow rate of 150 gpm.

D. Piping and valves shall be configured to allow each bag filter system to operate in parallel or vessel isolation flow mode. Valves shall isolate individual housing from the filter process, allowing continuous service of the remaining housings during media removal and replacement.

E. Bag filter housing shall be carbon steel construction with “over-the-top” delivery only.

F. Bag filter housing shall be built to ASME Code Standards.

G. Bag filter housings shall be rated for a maximum working pressure of 150 pounds per square inch (psi) at a maximum working temperature of 300 degrees F.

H. Bag filter housings shall be capable of utilizing 0.5 micron high efficiency bag filters.

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2.17 EFFLUENT STORAGE TANKS (T-900 and T-910)

A. The tank shall be a 21,000 gallon Modern Fixed Axle Tank (V-Bottom Version), provided by BakerCorp, or approved equal.

B. The effluent storage tanks shall be of steel construction. The tanks shall have closeable tops which allow the water level in the tank to be determined by visual inspection and the use of a stick level indicator. The minimum total effluent storage capacity shall be 42,000 gallons.

C. Each tank shall be furnished with an inlet and outlet pipe connection. The tank shall be equipped with a "v" shaped bottom to collect residual liquid.

D. The effluent tanks shall contain a high level switch with a local and panel alarm indicator.

2.18 PIPING AND APPURTENANCES

A. The Contractor shall provide all necessary piping and appurtenances required for operation of the temporary treatment system.

B. Piping located inside the temporary water treatment system containment area shall be PVC Schedule 80. Piping located outside the temporary water treatment system containment area shall be single wall, HDPE SDR 11, butt fused construction.

C. All piping and appurtenances shall conform to applicable American Society for Testing and Materials (ASTM) standards.

D. All exterior piping required for the treatment system shall be protected from vehicular traffic when placed on ground surface (e.g., influent pipe from excavation areas).

2.19 FLOW METERS (FM-100, FM-300, FM-540, FM-550, FM-900 and FM-1000)

A. Flow meters shall be 2-inch Magnetoflow Mag Meter as manufactured by BadgerMeter, Inc., or approved equal.

B. All flow meters shall be equipped with a rubber liner, Alloy C electrodes, remote mount electronics, grounding rings and flanged end connections. All flow meters shall be capable of displaying both instantaneous and totalized flow locally.

2.20 LEVEL SWITCHES (LSH-001, LSH-002, LSL/LSH-003, LSH/LSL-100, LSH/LSL-110, LSH/LSL-120, LSH/LSL-130, LSH-200, LSH/LSL-300, LSH/LSL-900, and LSH/LSL-910)

A. All level switches shall be Series M manufactured by Gems Sensors, or approved equal.

B. All level switches shall be mechanical tilt float level switches.

SECTION 13602 – TEMPORARY WATER TREATMENT SYSTEM

2.21 PRESSURE GAUGES

The Contractor shall provide all necessary pressure gauges to ensure proper monitoring of the entire treatment system.

2.22 AIR COMPRESSOR

The air compressor shall be sized by the Contractor to supply air to the double diaphragm pumps and the multi-media filter valves.

2.23 SPARE PARTS

The Contractor shall furnish spare parts and accessories for equipment necessary to maintain the temporary water treatment system. At a minimum, the following should be kept on hand during system operation:

- (2) cases of 0.5 high efficiency micron bag filters
    - The number of filters required and the micron rating are subject to change depending on treatment system performance observed and documented during initial system startup
- (1) pressure gauge
- Miscellaneous PVC piping and fittings
- (1) complete rebuild kit for double diaphragm pumps
- Spare polyethylene tubing for chemical metering pump

Spare parts shall be identical and interchangeable with original parts. Parts shall be supplied in clearly identified containers, except that large or bulky items may be wrapped in polyethylene. Each part (or group of small parts) shall be tagged and each tag shall carry the following information: Identity of the equipment the part is for, identity or name of the part itself, and manufacturer's name and identification number of the part. Spare parts shall be stored separately in a locked area, maintained by the Contractor.

PART 3 – EXECUTION

3.01 GENERAL

The Contractor shall provide power, operate and maintain a temporary onsite water treatment system as described in this specification that shall be used to treat liquid waste streams in accordance with the Contract Documents. The Contractor shall maintain lines of communication with the Owner regarding all discharge issues. Utility pole PSNH4 is located in the vicinity of the proposed treatment system area for use. It is anticipated that a new pole equipped with a transformer will need to be located near the treatment system location (across the street from PSNH4) Coordination and costs associated with connection to this installation of the new utility poles and transformer and connection to utility pole PSNH4are the Contractor’s responsibility.

SECTION 13602 – TEMPORARY WATER TREATMENT SYSTEM

3.02 EXCAVATION DEWATERING

A. In the event that accumulation of groundwater, direct precipitation, or run-off are present in quantities that inhibit excavation to the specified limits, the Contractor shall be responsible for providing the necessary equipment, materials, and labor to remove and transport such water to the temporary water treatment facility located at the Mill Street Site. At a minimum, this shall include provision of pumps, tank(s), and means of transporting accumulated water to the onsite temporary water treatment facility.

B. Pumps shall be used to remove accumulated waters from excavation areas whenever the presence of such water inhibits excavation activities, compromises the integrity of the excavation sidewalls, or as directed by the Owner or Engineer.

3.03 COLLECTION OF LIQUIDS

A. All liquid that requires handling and treatment/disposal shall be collected and transferred to the temporary water treatment system. The method(s) by which water is collected shall be area-specific, and shall be conducted in a manner that prohibits the spillage, leakage, or other release of water as collected.

B. The Contractor shall maintain timely and accurate records concerning the volumes and areas from which accumulated liquids are removed and transported to the treatment system.

C. All equipment utilized to collect/handle accumulated liquids, including pumps, tanks, and tanker trucks, as appropriate, shall be decontaminated by the Contractor prior to removal from the Site.

3.04 HANDLING AND STORAGE

A. The Contractor shall at all times store all liquids in containers acceptable to the Owner and reviewed by the Engineer. Storage containers may be reused by the Contractor, unless otherwise directed by the Engineer.

B. The Contractor shall clearly mark all storage containers to indicate the known or suspected contents, source area(s), and date(s) of generation.

3.05 DISCHARGE LIMITS

The Contractor shall at all times maintain the treatment system so as to not exceed the substantive requirements for water discharge identified in Table 1 at the end of this Section. The discharge limits provided in Table 1 are based on the Remediation & Miscellaneous Contaminated Site General Permit (RGP).

3.06 TESTING AND STARTUP ACTIVITIES

After mobilization and setup of the water treatment system, the Contractor shall perform system startup and testing activities and troubleshooting prior to initiating full scale (normal) operations. Startup and testing activities shall be in accordance with the manufacturer's recommendations

and as indicated in the Contractor-prepared O&M Manual that has been reviewed by the Engineer. General startup and testing of the temporary water treatment system shall consist of treating a minimum of 40,000 gallons of water collected from the first proposed excavation area (i.e., water that has been in contact with soil to be removed). During the startup test, the water treatment system shall be operated at the 150 gpm peak flow rate until the entire 40,000 gallon batch is treated (approximately 4.5 hours). During this time, the Contractor shall continuously monitor and record readings (every 30 minutes minimum) from all gauges, flow meters, etc. as necessary in order to demonstrate that the system is operating , including all treatment system backwash and recycle functions, as designed to the satisfaction of the Engineer. In addition, the Contractor shall make adjustments to the system as necessary to maintain a continuous flow rate of approximately 150 gpm while meeting the operating requirements of each system component. The Contractor shall collect start-up testing samples following treatment of approximately 10,000 gallons, 25,000 gallons and 40,000 gallons of water. The entire 40,000 gallons of treated water shall be retained in the effluent storage tanks until analytical results indicate that the Contractor may discharge the water to the onsite drainage ditch. Samples collected during start-up shall be submitted for laboratory testing based on the parameter list presented in the following table:

Parameter – USEPA Method No.	Influent/Effluent	Mid-Process
Polychlorinated Biphenyls (PCBs) - 608	Yes	Yes
Volatile Organic Compounds (VOCs) - 624	Yes	Yes
Semi-Volatile Organic Compounds (SVOCs) - 625	Yes	No
Metals – 200.7	Yes	No
Total Suspended Solids (TSS) - 160.2	Yes	No

Notes:
Mid-process samples shall be collected downstream of the oil/water separator, MMF, organoclay vessels, liquid-phase GAC vessels, and bag filters. Where the treatment train is divided into parallel streams, samples from each parallel stream shall be collected. Samples shall be collected during general startup testing of the system and during normal operations. Some or all of these mid-process locations may be eliminated as operating experience is gained. Metals analyses (all total) include Arsenic, Cadmium, Chromium, Copper, Nickel, Zinc and Iron.

3.07 SYSTEM MONITORING

3.07.1 WATER QUALITY TESTING

Treatment system water quality testing shall also be conducted during normal operations. During the first month of operation, testing shall be conducted once per week. During and after the second month of operation, extending until system shutdown, testing shall be conducted once per month. Operational sampling shall be collected in accordance with the table in Section 3.0.6.

3.07.2 ROUTINE MONITORING

The temporary water treatment system shall initially be manually operated and controlled through a series of valves, visual reading gauges, and pump controls as necessary to accommodate system operation. The Contractor shall provide for a water treatment system operator to be onsite during system operation. As operating experience is gained, the Contractor may add additional controls and alarms approved by the Engineer to eliminate the need for an onsite operator. At a minimum,

the daily activities to be initially performed by the system operator (at least once per shift) include, but are not limited, to the following:

- Control of all tank valves, as necessary, to fill and drain the tanks.
- Visual inspection of influent and effluent piping to and from the treatment system.
- Visual inspection of influent piping to ensure no leakage is occurring.
- Visual inspection of the tanks to avoid overfilling.
- Visual inspection of all pumps, fittings and equipment to ensure no leakage is occurring.
- Visual inspection of containment liner to ensure it remains in good condition.
- Obtaining readings from the system pressure gauges associated with all treatment systems within the treatment train. Pressure gauge readings may be used to determine when a backwash event or filter replacement is required or that a particular treatment unit is not functioning properly.
- Obtaining readings from the system flow meters to monitor the system flow rates.
- Obtaining readings from the effluent flow totalizer to record the total system flow to date and calculate the daily flow total.
- During the operation of the treatment system, the influent tanks shall be visually inspected each time they are emptied to determine the depth of the sediment in the bottom of the tank. If sediment is observed to be 4 inches deep (or if directed by the Engineer) the tank shall be cleaned. Liquids which result from the cleaning activities shall be treated using the temporary water treatment system, while solids shall be collected and pumped to the solids holding tank for subsequent disposal.
- The Contractor shall collect, at a minimum once per day, the following water quality field data: turbidity and pH within the treatment train to provide indications of system performance at the following locations:

    - Influent holding tanks
    - upstream of MMF units
    - upstream of the organoclay vessels
    - upstream of liquid-phase GAC units
    - downstream of liquid-phase GAC units
    - downs stream of the bag filter units

As operating experience is gained and following approval by the Engineer, the Contractor may reduce the frequency of the above-described monitoring.

SECTION 13602 – TEMPORARY WATER TREATMENT SYSTEM

3.08 CORRECTIVE ACTIONS

At the direction of the Owner or Engineer, the Contractor shall take corrective actions as necessary to maintain specified treatment system performance in the event of an upset condition and/or operating conditions that result in non-compliant effluent water quality. During corrective actions, the Contractor may be required to mobilize additional effluent storage tanks and/or repeat start-up and testing procedures as specified herein. If the Contractor fails to make these corrections, or if the improved equipment fails to meet the guarantees or specified requirements, the Owner, notwithstanding having made partial payment for work and materials which have entered into the manufacture of said equipment, may reject said equipment and order the Contractor to remove it from the premises at the Contractor's expense.

3.09 DOCUMENTATION

The Contractor shall maintain a daily operations log (i.e., tabulated results) in which the process variables described above shall be recorded. In addition, all activities related to O&M of the treatment system shall be documented in the daily log. The daily log shall be kept onsite and shall be made available to the Engineer on demand.

SECTION 13602 – TEMPORARY WATER TREATMENT SYSTEM

Table 1
Substantive Requirements for Water Discharge
Fletcher's Paint Works and Storage Facility Superfund Site
Milford, New Hampshire

Parameter	Discharge Limits	Units	Limit Type Based on Monthly Sample	Sample Type
Total Suspended Solids	30	mg/L	Monthly Average	Grab
Benzene	5	ug/L	Daily Maximum	Grab
Toluene	Limited as Total BTEX		Daily Maximum	Grab
Ethylbenzene	Limited as Total BTEX		Daily Maximum	Grab
Xylenes,Total	Limited as Total BTEX		Daily Maximum	Grab
Total BTEX	100	ug/L	Daily Maximum	Grab
Methyl-tert-butyl ether (MtBE)	70	ug/L	Daily Maximum	Grab
tert-Butyl Alcohol (TBA)	Monitor Only		Daily Maximum	Grab
tert-Amyl Methyl Ether (TAME)	Monitor Only		Daily Maximum	Grab
1,4-Dichlorobenzene	5	ug/L	Daily Maximum	Grab
1,2-Dichlorobenzene	600	ug/L	Daily Maximum	Grab
1,3-Dichlorobenzene	320	ug/L	Daily Maximum	Grab
Total Dichlorobenzene	763	ug/L	Daily Maximum	Grab
1,2-Dichloroethane	5	ug/L	Daily Maximum	Grab
cis-1,2-Dichloroethene	70	ug/L	Daily Maximum	Grab
Trichloroethene	5	ug/L	Daily Maximum	Grab
Vinyl Chloride	2	ug/L	Daily Maximum	Grab
Acetone	Monitor Only		Daily Maximum	Grab
Phenol, Total	300	ug/L	Daily Maximum	Grab
Total Phthalates (Phthalate esthers)	3	ug/L	Monthly Average	Grab
Total Group II Polycyclic Aromatic Hydrocarbons (PAH)	100	ug/L	Daily Maximum	Grab
Fluorene	Limited as Total Group II PAH		Daily Maximum	Grab
Naphthalene	20	ug/L	Daily Maximum	Grab
Phenanthrene	Limited as Total Group II PAH		Daily Maximum	Grab
Total PCBs	0.5	ug/L	Daily Maximum	Grab
Arsenic, Total	10	ug/L	Monthly Average	Grab
Cadmium, Total	1.8	ug/L	Monthly Average	Grab
Chromium, Total	43	ug/L	Monthly Average	Grab
Copper, Total	5.1	ug/L	Monthly Average	Grab
Nickel, Total	30	ug/L	Monthly Average	Grab
Zinc, Total	67	ug/L	Monthly Average	Grab
Iron, Total	1000	ug/L	Daily Maximum	Grab

Notes:
1. ug/L = Micrograms per liter
2. The total PCBs discharge limit is 0.000064 ug/L but the compliance limit is equal to the Minimum Level (ML) of the test method used (0.5 ug/L for Method 608).
3. Discharge limits for Cadmium, Chromium, Copper, Nickel and Zinc are hardness dependent; a site-specific hardness value of 52 milligrams per liter (mg/L) as $CACO_3$ was assumed in the calculations.

- END OF SECTION -

SECTION 13810 – MATERIAL TRANSPORT AND OFF-SITE DISPOSAL

PART 1 – GENERAL

1.01 WORK SPECIFIED

A. The Contractor shall furnish all labor, materials, tools, equipment, accessories, and appurtenances necessary to provide transport of all generated waste streams, including, but not limited to, debris generated as a result of Site clearing and grading, excavated soil due to remediation activities, equipment cleaning and decontamination waste, and residual wastes generated by the Contractor and the Engineer. The Contractor shall be responsible for obtaining the appropriate equipment necessary for the transportation of such materials. The Contractor also shall be responsible for the disposal of miscellaneous wastes.

1.02 SUBMITTALS

A. The Contractor shall provide a minimum of two copies of the following items as they relate to the offsite transport and disposal of waste materials:

- Load number (sequential).
- Uniform Hazardous Waste Manifests.
- Bill of Lading.
- Truck ID number (license plate number of the truck and/or trailer used).
- Time of departure from the work Site.
- Landfill ticket identification number.
- Gross weight.
- Tare weight.
- Net load weight.
- Hazardous material status.

1.03 REFERENCES

A. Applicable Occupational Safety and Health Administration (OSHA) Regulations.

B. Applicable New Hampshire Department of Transportation (NHDOT) Regulations.

C. Section 01750 – Decontamination and Wipe Sampling of Equipment.

PART 2 – PRODUCTS

A. Containers used to temporarily store or transport materials from the Site shall be NHDOT-approved and appropriate for the type of material being stored or transported. At a minimum, trucks used for offsite transport of materials shall be watertight, lined, and covered to prevent leakage or spillage of the transported material. Trucks and other equipment used for transporting Toxic Substance Control Act (TSCA) material from the Site shall meet all applicable state and federal regulations.

SECTION 13810 – MATERIAL TRANSPORT AND OFF-SITE DISPOSAL

PART 3 – EXECUTION

3.01 CHARACTERIZATION

A. All waste streams shall be characterized by the Contractor, with oversight by the Engineer, as required by applicable federal, state, and local laws, rules, and regulations, as well as any additional requirements imposed by the receiving landfill or disposal facility.

3.02 LOADING AND TRANSPORTATION

A. Equipment leaving the various work zones or the Site itself shall be inspected and decontaminated in accordance with Section 01750 – Decontamination and Wipe Sampling of Equipment. Solids and wastewater generated by this process shall be handled and disposed in accordance with other solid and liquid streams as specified.

B. All waste streams shall be secured into containers, labeled, packaged, and transported in accordance with appropriate NHDOT requirements.

C. All waste streams shall be hauled directly from the Site to the final disposal facility.

D. Transportation of all waste streams shall be in accordance with all federal, state, and local laws, rules, and regulations.

E. The Contractor shall be required to have all appropriate local, state, and federal transport permits, licenses, and approvals.

F. The Contractor shall inspect transport vehicles prior to loading for signs of defect (e.g., tires, gate, etc.) and shall not load vehicles which show signs of defect.

G. The Contractor shall conduct all loading, transport, and offsite disposal activities such that no spillage occurs. Should unanticipated spills or leaks occur, the Contractor shall be responsible for conducting any and all remedial activities necessary to remediate such spills at no additional cost to the Owner.

H. If objectionable odors are encountered during loading, transport, or unloading, odor control measures will be implemented, in consultation with the Engineer.

I. In accordance with applicable regulations, all containers used for the offsite transport of materials shall be covered prior to offsite transport. Containers used to transport hazardous materials shall utilize impermeable, water tight liners, or equivalent, as approved by the Engineer.

J. If segregation of material containing hazardous constituents is necessary, the Contractor shall be responsible for separate storage, removal, and transport of this material.

- END OF SECTION -