

Solicitation No. \_\_\_\_\_

**102ND STREET LANDFILL SITE**

**NIAGARA FALLS, NEW YORK**

**REMEDIAL PROGRAM FOR OFF-SITE SOILS  
TRIANGULAR AREA, NORTH OF BUFFALO AVENUE**

**EXHIBIT G**

**CONSTRUCTION DRAWINGS**

**REMEDIAL DESIGN DOCUMENT**

**ADDENDUM 1**

**INSTRUCTIONS**

Attached are the amended pages of the Remedial Design Document for the Triangular Area north of Buffalo Avenue.

The document to be amended is identified in the lower left corner of each amended page. The original page of the document, as identified by the page number, is to be removed and replaced by the amended page.

- Access agreements for parcels of property that comprise the Triangular Area.
- Existing structures and associated appurtenances will be demolished prior to work described herein and is considered outside the scope of the Remedial Activity.
- Soil sampling and testing for verification of excavation depth.

## **2.2 Soil Sampling and Testing Program**

Soil samples will be collected, prior to excavation, on an established grid at a depth of 18 inches. Sample points are indicated on Figure 2.1.2. The procedures for sampling are presented in the QAPP (Attachment C) and the SATP (Attachment D). These samples will be prepared for shipment in accordance with the procedure presented in the SATP and shipped to the designated analytical laboratory for testing of organic SSI compounds.

In the event that organic SSIs are detected above survey levels immediately below the initial 18-inch depth, then another round of sampling shall be performed at an additional depth of 18 inches within the corresponding compositing area. This same procedure shall be followed until no SSI readings are detected.

In the event that after the excavation to the 18-inch level, visible and/or olfactory signs of chemical presence are evident on the exposed surface, an additional 18 inches of soil shall be removed.

If once again, there are visible and/or olfactory signs of chemical presence on the subsequently exposed surface, the same procedure shall be repeated. Once the exposed surface is visually and olfactorily free of chemical presence, then sampling for SSIs shall be undertaken in the same manner as initially described.

## **2.3 Tree Removal/Clearing and Grubbing**

All trees within the extent of surficial excavation are to be removed. The portion of the trees aboveground shall be cut and felled in a manner to avoid disturbance of the surficial soils. Measures such as cribbing with branches cut from the trees will also be employed to avoid disturbing the ground surface. Fallen trees will be cut into sections and hauled onto the Landfill and stockpiled. Stumps and root systems will also be removed to a minimum depth of 18 inches and hauled to the Landfill. These tree sections, stumps and root systems will be chipped prior to placement in the Landfill. Grasses and other ground vegetation are to be removed concurrent with the excavation operation - not independently.

## 4.0 SAMPLING PROCEDURES

The procedures for collecting samples and for performing all related field activities are described in the SATP and summarized in the following sections.

### 4.1 SOIL SAMPLING

Soil sampling is required to determine SSI concentrations at the 18 inch depth prior to soil excavation to verify that the removal of soil will achieve the desired objectives. Samples will be taken in accordance with the SATP and supporting documentation. All sampling locations will be marked in the field and identified by a specific location number. The procedures to be followed for soil sampling are outlined in the SATP.

Additional samples will be collected in the event that organic SSIs are detected above survey levels immediately below the initial 18-inch depth. Another round of sampling shall be performed at an additional depth of 18 inches within the corresponding compositing area. This same procedure shall be followed until no SSI readings are detected.

In the event that after the excavation to the 18-inch level, visible and/or olfactory signs of chemical presence are evident on the exposed surface, an additional 18 inches of soil shall be removed.

If once again, there are visible and/or olfactory signs of chemical presence on the subsequently exposed surface, the same procedure shall be repeated. Once the exposed surface is visually and olfactorily free of chemical presence, then sampling for SSIs shall be undertaken in the same manner as initially described.

### 4.2 SAMPLE CONTAINERS, PRESERVATIVES, HOLDING TIMES AND SHIPPING

Sample container volume (32-oz. clear wide-mouth for semi-volatiles) will allow the size of sample to be sufficient for the performance of all required analyses with an additional amount collected to provide for quality control needs, split samples, or repeat analyses.

Table 4-1 lists the required sample containers, sample preservation methods, and required sample holding times. The utilization of these containers satisfies the requirements of cleaning and quality control procedures as required by the Sample Bottle Repository - Statement of Work (SBR-SOW).

Sample jars will be obtained from vendors that follow the SBR-SOW procedures for preparing, cleaning, labeling, storing, and quality control of containers. This involves analysis/testing of one or more representative containers from each lot or batch after they have been cleaned.

### 3.0 SAMPLING

A summary of sampling and analysis to be performed for all media is shown on Table 3-1. Sample volumes, container, and preservatives required will be supplied by the contracted analytical laboratory. Prior to field construction activities, initial soil characterization samples will be collected and analyzed. Sampling grids S01 thru S30 are shown on Figure 2.1.1. Each grid will be sampled to represent a projected 100 cubic yards of material to be excavated (Figure 2.1.2). Depth-verification samples will be collected on the established grid and tested prior to the mobilization of the excavating equipment. The objective of the sampling program is to finalize and verify the excavation depths and contours prior to soil removal.

#### 3.1 GENERAL

Soil sampling locations will be assigned using a systematic approach based on principles described in "Methods for Evaluating the Attainment of Cleanup Standards, Vol. 1: Soils and Solid Media" (EPA 230/02-89-042). Samples will be collected at a depth of 18 inches below ground surface, submitted to the analytical laboratory and tested for organic Site Specific Indicators (SSI). Validated analytical results above action levels for the organic SSIs in any grid area may require additional sample collection and testing at a depth of 24 inches. Table 3-2 lists SSI parameters and action levels.

Additional samples will be collected in the event that organic SSIs are detected above survey levels immediately below the initial 18-inch depth. Another round of sampling shall be performed at an additional depth of 18 inches within the corresponding compositing area. This same procedure shall be followed until no SSI readings are detected.

In the event that after the excavation to the 18-inch level, visible and/or olfactory signs of chemical presence are evident on the exposed surface, an additional 18 inches of soil shall be removed.

If once again, there are visible and/or olfactory signs of chemical presence on the subsequently exposed surface, the same procedure shall be repeated. Once the exposed surface is visually and olfactorily free of chemical presence, then sampling for SSIs shall be undertaken in the same manner as initially described.

#### 3.2 EQUIPMENT

The following equipment and materials will be used during sampling:

- (1) Hand bucket auger
- (2) Stainless steel shovel
- (3) Water, deionized and tap
- (4) Liquinox soap
- (5) Brushes
- (6) Stainless steel bowls and spoons

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### FIGURES

Figure 1-1	Excavation Area Location Plan
Figure 1-2	Excavation Work Zone
Figure 8-1	Project Organization Chart

The Emergency Response and Contingency Plan associated with this program is outlined in detail in Appendix A. OxyChem/Olin will be responsible for implementing this Plan with respect to occurrences on the Project Site.

## 1.1 SITE DESCRIPTION

The area to be remediated is adjacent to the 102nd Street Landfill Site. It is a narrow triangular parcel of land varying in width from approximately 10 feet to 125 feet (west to east) approximately 1110 feet long, bordered on the south by Buffalo Avenue and on the north by the LaSalle Expressway. This parcel is located across Buffalo Avenue from the Landfill. The northern boundary of the parcel is approximately delineated by a chain link fence running along the right of way of the LaSalle Expressway. The edge of pavement of Buffalo Avenue defines the southern boundary of the parcel (see Figure 1).

The topography of the Site is flat and the Site is vegetated with grass and a few trees.

The climate at the Site is classified as humid continental, consisting of cool, wet winters and hot, wet summers. The mean annual temperature is 47°F with the coldest average monthly temperature occurring in January (23.7°F) and the warmest in July (70.1°F). The mean annual precipitation is 36 inches, which is relatively evenly distributed throughout the year.

Thirty year averages for weather conditions during the anticipated period of remedial action are shown below.

	<u>October</u>	<u>November</u>	<u>December</u>
Prec. (inches)	2.93	3.62	3.42
Wind Speed (MPH)	11.1	12.7	13.3
Prevailing Direction	South	South	West-South-West
Temperature (°F)			
High	60.2	47	35
Low	42.7	33.6	22.5
Mean	51.5	40.3	28.8
Snowfall (inches)	0.2	11.6	22.6

## 1.2 PURPOSE/SCOPE OF REMEDIAL ACTION

Off-site soils above the cleanup threshold are to be consolidated on the Site. The limits of removal are based on Milestone Report No. 4, Off-Site Soil Survey, Rev. 1, 102nd Street Landfill Site, October 1988.

The remediation to be implemented is the removal and placement of excavated material in the Fill Placement Cell on the landfill. The excavated area will be backfilled and revegetated.

- During excavation in the Soil Excavation Zone, air monitoring will be performed in and around the work area. Monitoring at the Working Site Boundary will be performed per Section 9. Monitoring at the work area will be conducted using a Drager pump and Drager tubes for mercury vapor at the breathing zone of site personnel. If mercury vapor is detected at levels in excess of 50  $\mu\text{g}/\text{m}^3$ , personnel will upgrade respiratory protection.
- Personnel will use the buddy system for all work activities in the Soil Excavation Zone.

### 6.6.3 Non-intrusive Soil Excavation Zone Activities

Health and safety measures used by workers engaged in non-intrusive on-site activities will include, but should not be limited to the following:

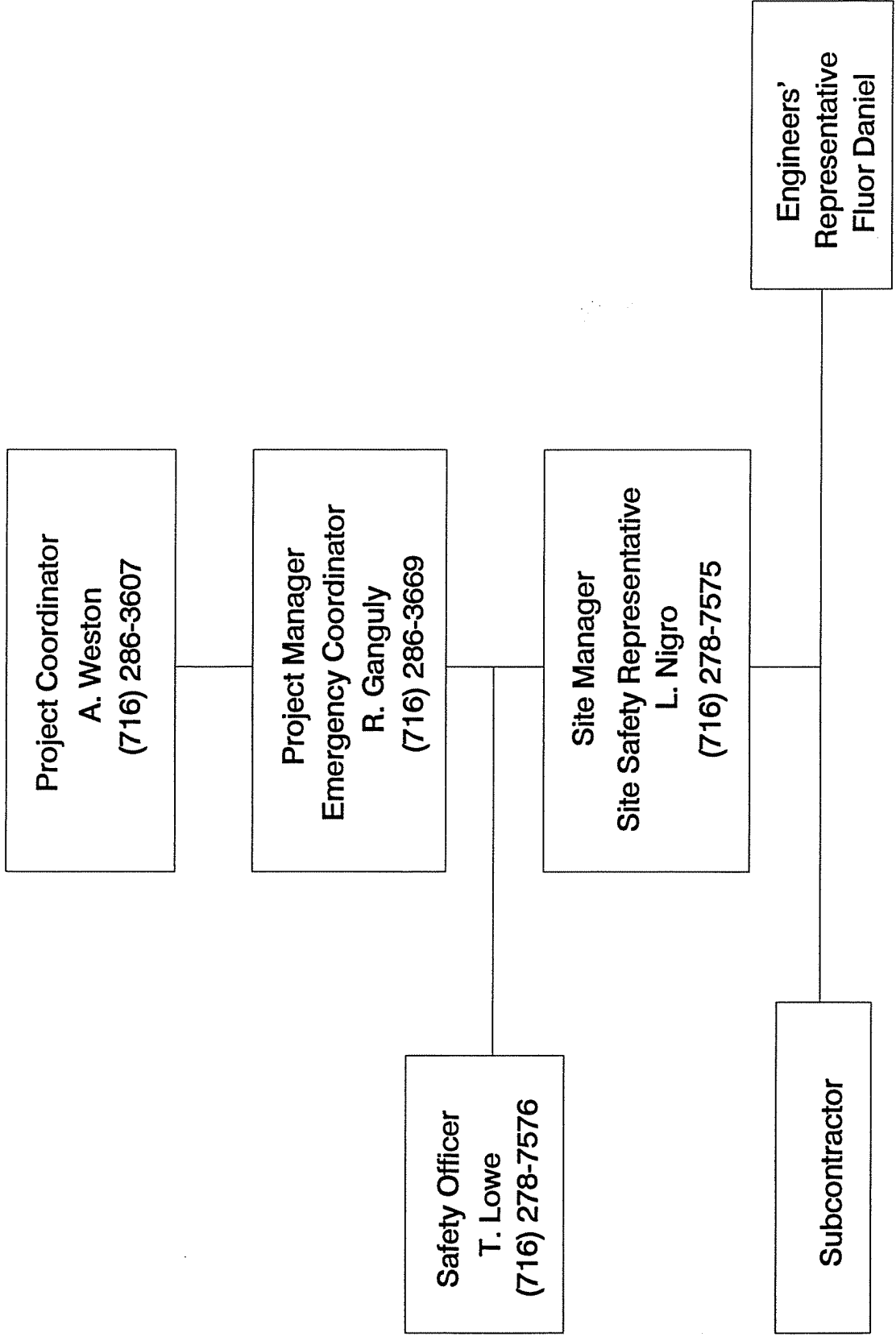
- LEVEL "D" PROTECTIVE EQUIPMENT
- The above level of Protection shall be up-graded, as appropriate, based on air monitoring results and potential task hazards.
- Air monitoring will be performed as described in Section 9 of this HASP. If air monitoring findings exceed action(s) levels, workers in the area will up-grade their level of protection. The Safety Officer shall be contacted as soon as possible if detectable contamination is discovered.
- Personnel will use the buddy system for all work activities in the Soil Excavation Zone.

## 6.7 EQUIPMENT DECONTAMINATION

Health and safety measures used by workers engaged in performing equipment decontamination will include, but should not be limited to the following:



102ND STREET LANDFILL SITE  
TRIANGULAR AREA REMEDIATION  
PROJECT ORGANIZATION CHART



## **14.0 HASP EFFECTIVENESS**

Daily walk around inspections shall be conducted by the Safety Officer to aid in determination of the effectiveness of the site safety and health plan. Evaluations will also be made: after a fire, after an accident, after a release, or after some type of emergency situation. Appropriate management personnel will determine how effective the HASP was during the emergency situation, and make corrections and adjustments to the HASP as necessary.

The Site Safety Representative will conduct a critique of response and follow-up of the effectiveness of the HASP and will provide a written report to the Project Manager.

a sanitary sewer if access exists. If access to a sanitary sewer does not exist, a street cleaner will be used.

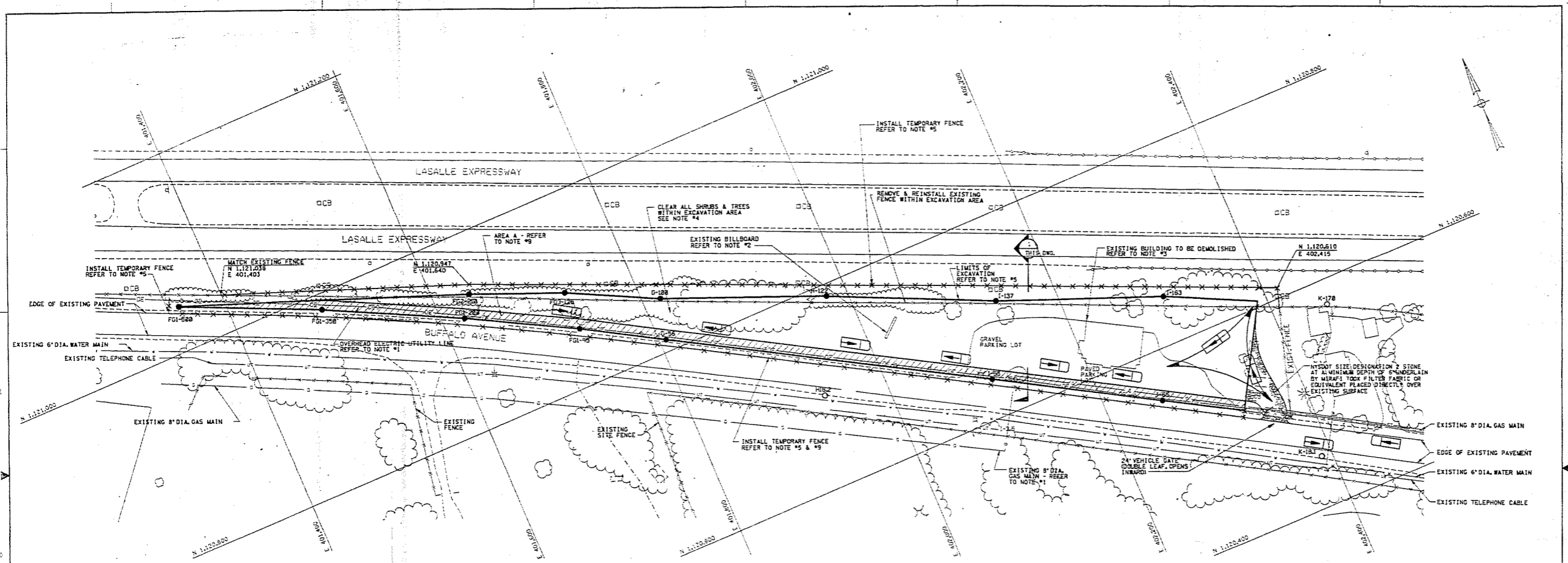
Liquid waste spills on the earth of the Project Site will be treated with absorbent material to absorb any free liquid still present. The absorbent material and approximately three inches of earth will be removed and placed in waste drums for storage in the drummed waste storage area. The excavated area will be refilled with clean fill material.

- B. After the initial goals are satisfied, the Emergency Team will prepare an initial cleanup plan (using Site Specific Indicator levels of 100  $\mu\text{g}/\text{kg}$  for soil as a guideline) for treating, storing and disposing of survey waste, soil, or any other material resulting from the emergency, in conformance with all applicable Federal, State and local statutes and regulations. Any recovered water and/or decon rinsewater will be placed in the storage tank at the landfill and transported to Occidental's Buffalo Avenue facility water treatment plant. Such activities will follow all aspects or goals of this Environmental Health and Safety Plan, including the use of proper protective equipment for response personnel and the proper cleaning of equipment. The cleanup plan will be submitted for State review and approval.

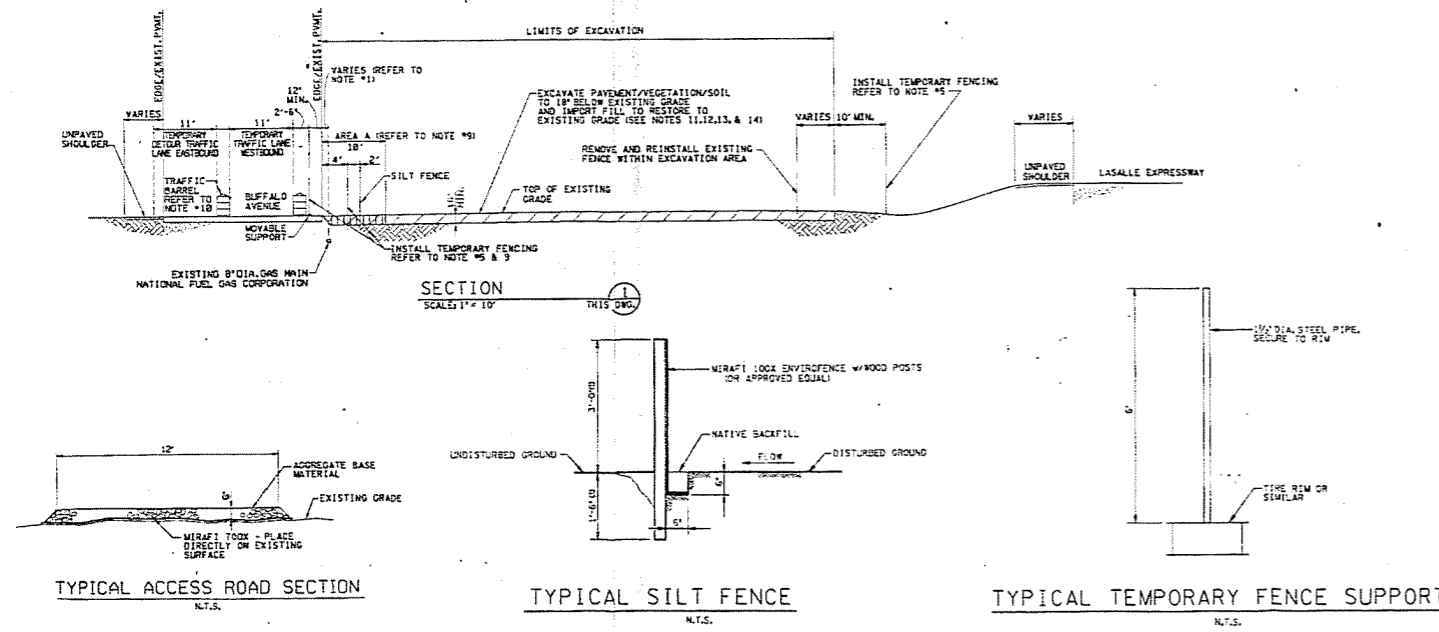
## 10.5 COMMUNICATIONS NETWORK

The following personnel are to be notified in the listed sequence in the event that this Hazardous Material Spill Response Plan is activated:

<u>Responsible Person</u>	<u>Contact</u>	<u>Telephone</u>
Project Personnel Observing Spill	Safety Officer	1-716-283-4415
Safety Officer	Plant Guard	1-716-278-7333

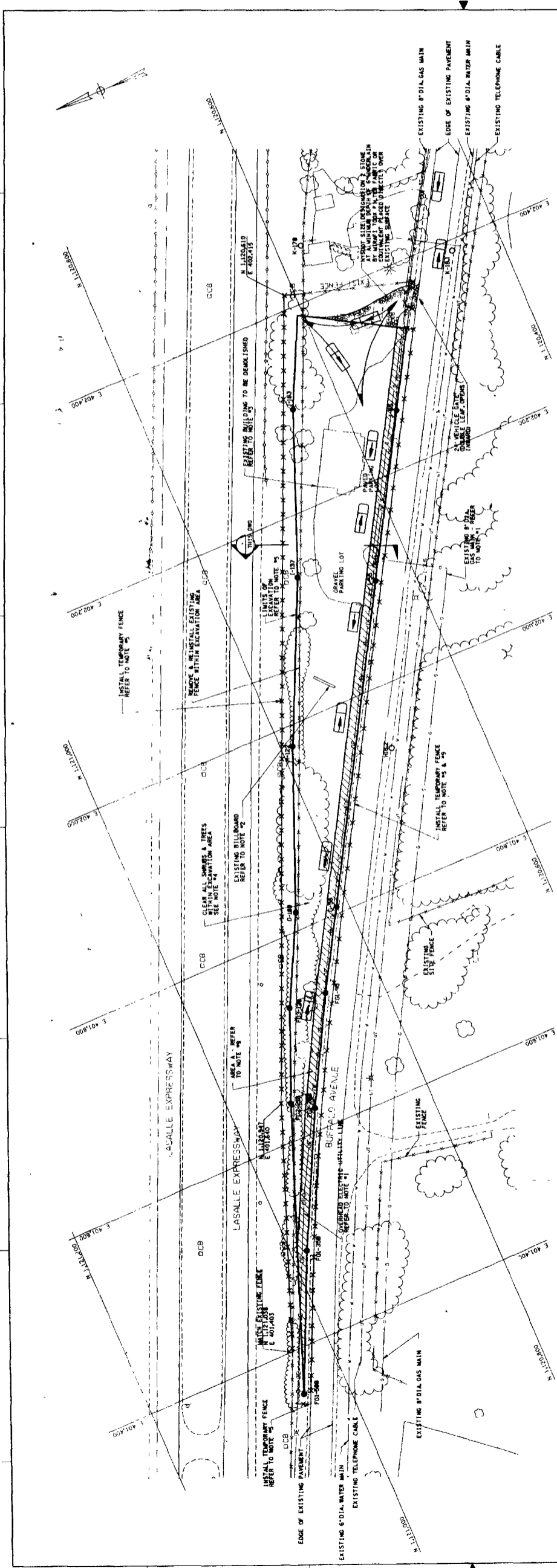


- NOTES:**
- PRIOR TO WORK ACTIVITIES, THE PUBLIC UTILITY COMPANIES WILL BE NOTIFIED BY THE OWNER OF IMPENDING OPERATIONS. WORK AHEAD OF CONTRACTOR SHALL BE COMPLETED PRIOR TO THE START OF WORK. THE CONTRACTOR SHALL NOTIFY EACH UTILITY OF THE WORK SCHEDULE AND COORDINATE ACTIVITIES WITH THE UTILITY COMPANIES. ALL EXISTING UTILITIES WITHIN THE WORK AREA SHALL BE IDENTIFIED, MARKED BY THE UTILITY COMPANIES, EXCAVATION AROUND AND WITHIN 2 FEET OF BURIED UTILITIES, KEYHOLES, APPROPRIATELY AND UTILITY LINES SHALL BE PERFORMED BY USE OF HAND TOOLS. PROVIDE SUITABLE PROTECTION FOR ALL UTILITIES EXCAVATION DEEPER THAN 18 INCHES ADJACENT TO UTILITY POLES SHALL BE SUPPORTED AT 1 FT FROM THE EDGE OF THE POLE, NO MORE THAN 18 INCHES OF THE COVERED SECTION OF THE POLE SHALL BE CREATED WITHOUT TEMPORARY SUPPORT AS APPROVED BY THE UTILITY.
  - THE EXISTING BILLBOARD SHALL REMAIN. PROVIDE TEMPORARY SUPPORTS AS REQUIRED TO PREVENT UNDERMINING OF THE STRUCTURE. NOTE THAT THERE IS NO ELECTRICAL SERVICE TO THIS BILLBOARD.
  - THE EXISTING STRUCTURE AND ASSOCIATED APPROPRIANCES WILL BE DEMOLISHED PRIOR TO WORK DESCRIBED HEREIN.
  - ALL TREES AND SHRUBS CONTAINED WITHIN THE EXTENT OF SURFICIAL EXCAVATION ARE TO BE REMOVED. THE PORTION OF THE TREES ABOVE GROUND SHALL BE CUT AND FELLED IN A MANNER TO AVOID DISTURBANCE OF THE SURFICIAL SOILS. MEASURES SUCH AS CHIPPING WITH BRANCHED CUT FROM THE TREES WILL BE EMPLOYED TO AVOID DISTURBING THE GROUND SURFACE. FALLEN TREES WILL BE CUT INTO SECTIONS AND HALLED ONTO THE SITE AND STOCKPILED. STUMPS AND ROOT SYSTEMS WILL BE REMOVED TO A MINIMUM DEPTH OF 18 INCHES. HALED TO THE SITE AND STOCKPILED PENDING CHIPPING OPERATIONS.
  - THE WORK ZONE DELINEATION IS BASED ON A SURVEY OF THE CONCENTRATION OF THE INDICATORS REPORTED IN ALL SITE REPORT NO. 111747-001-01, 02, 03, 04, 05, 06, 07, 08, 09, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100.
  - THE CONTRACTOR SHALL INSTALL A 6 IN. ROAD OR ROAD AS REQUIRED TO PROVIDE ACCESS TO THE AREA BEING EXCAVATED. TRUCKS SHALL MONITOR TO AND FROM THE EXCAVATION ON THIS TRUCK ROAD. THE EXCAVATION OPERATIONS SHALL PROCEED IN A MANNER TO AVOID CONTAMINATION OF THE MAIN ROAD.
  - THE EXCLUSION ZONE IS DEFINED AS THAT AREA ACTIVELY BEING EXCAVATED OR EXCAVATED AND NOT BACKFILLED EXCLUDING SUCH ADJUTANT SPACE THAT MAY BE REQUIRED FOR EQUIPMENT MANEUVERING, TEMPORARY AND REMAINING SECTIONS OF FENCING SHALL BE INSTALLED TO CIRCUMSCRIBE THIS AREA.
  - CONTAMINANT REDUCTION PROTOCOL: THE AREA ACTIVELY BEING EXCAVATED SHALL BE KEPT TO A MINIMUM EXCAVATION AND FILLING OF THE TRUCKED OPERATIONS SHALL BE DONE IN A MANNER TO AVOID SPILLING OF THE AREA ADJACENT TO THE EXCAVATION AND THE EXTERIOR OF THE TRUCK. THE TRUCK LOADING AREA UNDER THE TRUCK SHALL BE COVERED BY MULTIPLE LAYERS OF 6 MIL POLYETHYLENE. THIS AREA CONSTITUTES THE CONTAMINANT REDUCTION ZONE. ALL MATERIALS TO BE EXCAVATED SHALL BE PLACED IN THIS AREA. IN THIS AREA, THE LOADING AREA SHALL BE AS CLOSE AS FEASIBLE TO THE AREA BEING EXCAVATED. ADDITIONALLY, MULTIPLE SHEETS (AT LEAST TWO) SHALL BE DRAPED OVER THE TRAILER AND TRUCK. THIS ENCLOSURE SHALL BE REMOVED AFTER THE TRUCK IS FULL OR THE EXCAVATION OPERATIONS TERMINATED FOR THE DAY. THE TRUCK SHALL BE COVERED WITH 6 MIL POLYETHYLENE. THE MATERIAL IN THE TRAILER SHALL BE PLACED BACK OVER THE MATERIAL IN THE TRAILER. TAPS WILL BE PLACED AND SECURED TO THE TRAILER. TAPS SHALL BE RESTORED TO PREVIOUS CONDITION DURING TRANSPORTATION TO THE FILL MATERIAL. REMOVAL OF TRUCKS FROM THE EXCAVATION SHALL BE COORDINATED WITH THE TRUCKING COMPANY. TRUCKS SHALL BE COVERED WITH 6 MIL POLYETHYLENE. TRUCKS SHALL LEAVE THE EXCAVATION AREA WITHOUT RECEIVING APPROVAL FROM THE SITE REPRESENTATIVES.
  - EXCAVATE/BACKFILL AREA A FIRST. RELOCATE THE TEMPORARY FENCING AND INSTALL SILT FENCE AS SHOWN ALONG BUFFALO AVENUE.
  - PROVIDE TRAFFIC CONTROL DEVICES INCLUDING FLASHING AND INFORMATION SIGNS IN ACCORDANCE WITH NEW YORK STATE DEPARTMENT OF TRANSPORTATION (NYSDOT) INFORMATION SIGNS TO INCLUDE REDUCE SPEED AHEAD, SPEED LIMIT 20 MPH IN CONSTRUCTION AREA AND TRUCK CROSSING AHEAD. REFER TO SPECIFICATION 110.0100, PART 2, DURING EXCAVATION/BACKFILLING OPERATIONS. IN AREA A, PROVIDE TEMPORARY TRAFFIC CONTROLS SUCH AS REFLECTORIZED BARRELS TO OFFSET/DELINEATE TRAFFIC LANE.
  - SAMPLES FOR VERIFICATION TESTING SHALL BE COLLECTED ON AN ESTABLISHED GRID BY THE OWNER'S REPRESENTATIVE PRIOR TO EXCAVATION. ADDITIONAL SAMPLES FOR VERIFICATION TESTING MAY BE COLLECTED BY THE OWNER'S REPRESENTATIVE DURING THE EXCAVATION OPERATION. UPON RECEIPT OF THE TEST RESULTS, A DECISION AS TO THE TOTAL DEPTH OF EXCAVATION WILL BE MADE.
  - EXCAVATE TRIANGULAR AREA TO DEPTH DEFINED BY THE VERIFICATION TESTING (18" MINIMUM BELOW EXISTING GRADE). TRANSPORT SOIL, PAVING AND OTHER MATERIALS TO THE FILL MATERIAL PLACEMENT CELL WITHIN THE 102ND STREET LANDFILL SITE. SEE SPECIFICATION SECTION 600.01, PART 2, FOR PLACEMENT PROCEDURES.
  - AREAS EXCAVATED OR PARTIALLY EXCAVATED AND NOT BACKFILLED SHALL BE COVERED WITH TWO LAYERS OF 6 MIL POLYETHYLENE SHEET. THEN TAPS ARE TO BE PLACED OVER THE AREA EXCAVATED OR SHOWN OF WOODEN FRAMEWORK TO DIRECT EXCAVATED MATERIAL FROM THE EXCAVATION. IN THE EVENT OF RAIN, THE EXCAVATION OPERATIONS SHALL CEASE AND THE AREA IMMEDIATELY COVERED AS DESCRIBED ABOVE.
  - AFTER THE EXCAVATION IS COMPLETED TO THE DEPTH DEFINED BY THE VERIFICATION TESTING, BACKFILLING OPERATIONS SHALL COMMENCE. IMMEDIATELY, THE FACE OF THE BACKFILL SHALL BE KEPT AT A MINIMUM OF 10 FEET FROM THE AREA BEING EXCAVATED. THE EXCAVATED AREA WILL BE BACKFILLED WITH CLEAN FILL FROM A PRE-APPROVED SOURCE. LINES AND CORNERS TO 1/4" TYPICAL SHALL BE MAINTAINED. THE AREA SHALL BE RESTORED TO ITS PREVIOUS GRADE. TOPSOIL SEEDING AND MULCHING IN ALL AREAS A MINIMUM OF SIX INCHES OF TOPSOIL WILL BE PLACED TO SUPPORT VEGETATION.

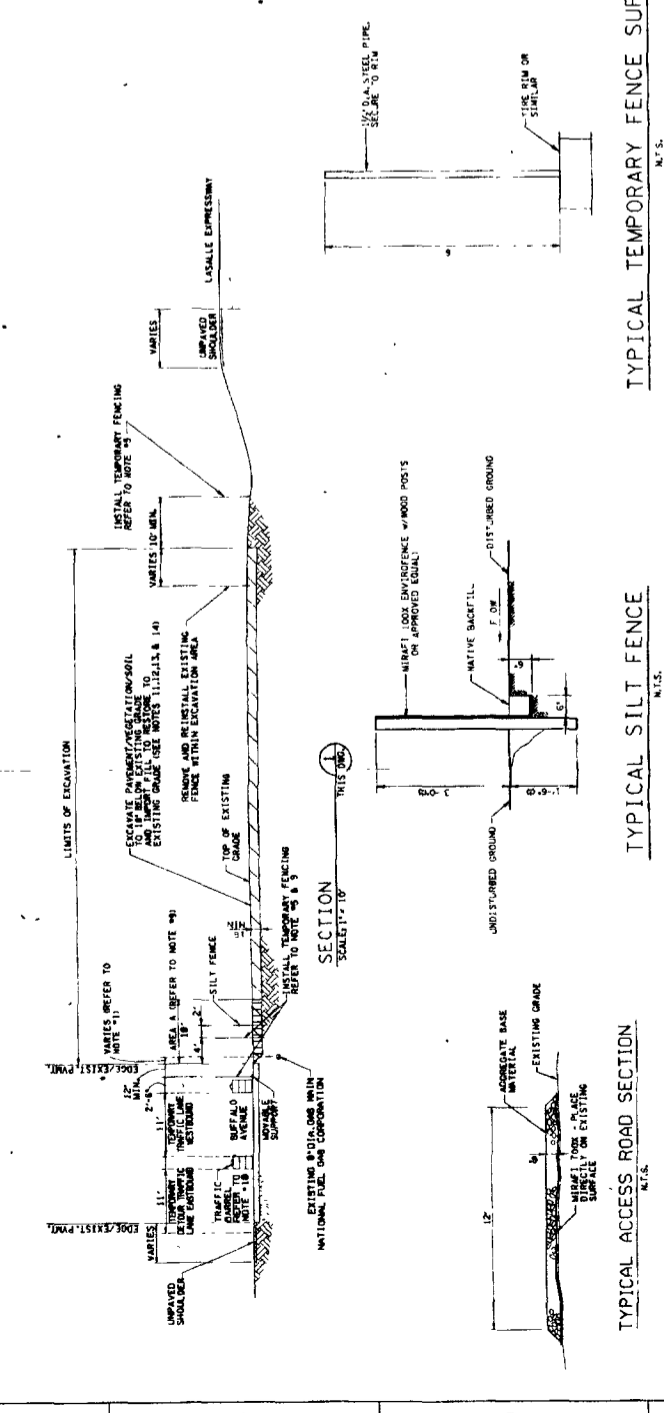


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0	5/25/12	SUBMITTED WITH REMEDIAL DESIGN DOCUMENT FOR REVIEW/APPROVAL								MCINTOSH & MCINTOSH TOPOGRAPHIC MAP OF 102ND STREET LANDFILL-AUGUST 7, 1992			REMEDIAL ACTION TRIANGULAR AREA NORTH OF BUFFALO AVE 102ND STREET LANDFILL SITE NIAGARA FALLS, NEW YORK	2/18/93	1"=40'	594000-30L-03	2
1	2/18/93	ISSUED FOR CONSTRUCTION															
2	8/11/93	ISSUED FOR BIDS															





- NOTES:**
- PRIOR TO WORK ACTIVITIES, THE PUBLIC UTILITY COMPANIES WILL BE NOTIFIED BY THE OWNER OF THE WORKING OPERATIONS IN THE AREA OF THE EXCAVATION. THE COMPANIES TO BE NOTIFIED ARE THE CITY OF BUFFALO, THE NIAGARA MOBILE TELEPHONE COMPANY, THE NIAGARA ELECTRIC POWER CORPORATION, THE NIAGARA GAS CORPORATION, THE NIAGARA WATER SUPPLY CORPORATION, AND THE NIAGARA TELEPHONE COMPANY. THE COMPANIES SHALL BE NOTIFIED AT LEAST 10 BUSINESS DAYS PRIOR TO THE START OF WORK. THE COMPANIES SHALL BE PROVIDED WITH A COPY OF THE EXCAVATION PLAN AND SHALL BE REQUIRED TO SIGN AND RETURN TO THE ENGINEER A STATEMENT OF NO INTERFERENCE WITH THEIR UTILITIES. THE STATEMENT SHALL BE FILED WITH THE EXCAVATION PERMIT. THE ENGINEER SHALL BE NOTIFIED OF ANY INTERFERENCE WITH UTILITIES PRIOR TO THE START OF WORK. THE ENGINEER SHALL BE REQUIRED TO APPROVE ANY CHANGES TO THE EXCAVATION PLAN THAT MAY AFFECT UTILITIES.
  - THE EXCAVATION SHALL BE LIMITED TO THE AREA SHOWN ON THE EXCAVATION PLAN. THE EXCAVATION SHALL NOT BE DEEPER THAN 10 FEET UNLESS OTHERWISE SPECIFIED. THE EXCAVATION SHALL NOT BE WIDER THAN 10 FEET UNLESS OTHERWISE SPECIFIED. THE EXCAVATION SHALL NOT BE LONGER THAN 10 FEET UNLESS OTHERWISE SPECIFIED. THE EXCAVATION SHALL NOT BE DEEPER THAN 10 FEET UNLESS OTHERWISE SPECIFIED. THE EXCAVATION SHALL NOT BE WIDER THAN 10 FEET UNLESS OTHERWISE SPECIFIED. THE EXCAVATION SHALL NOT BE LONGER THAN 10 FEET UNLESS OTHERWISE SPECIFIED.
  - ALL TIES AND CHAINS CONTAINED WITHIN THE EXCAVATION SHALL BE REMOVED PRIOR TO THE START OF WORK. THE TIES AND CHAINS SHALL BE REMOVED TO A MINIMUM OF 10 FEET FROM THE EXCAVATION. THE TIES AND CHAINS SHALL BE REMOVED TO A MINIMUM OF 10 FEET FROM THE EXCAVATION. THE TIES AND CHAINS SHALL BE REMOVED TO A MINIMUM OF 10 FEET FROM THE EXCAVATION.
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REV	DATE	DESCRIPTION	BY	CHKD	APP'D
0	10/15/03	ISSUED FOR REVIEW			
1	10/20/03	ISSUED FOR CONSTRUCTION			
2	10/25/03	ISSUED FOR TIDS			

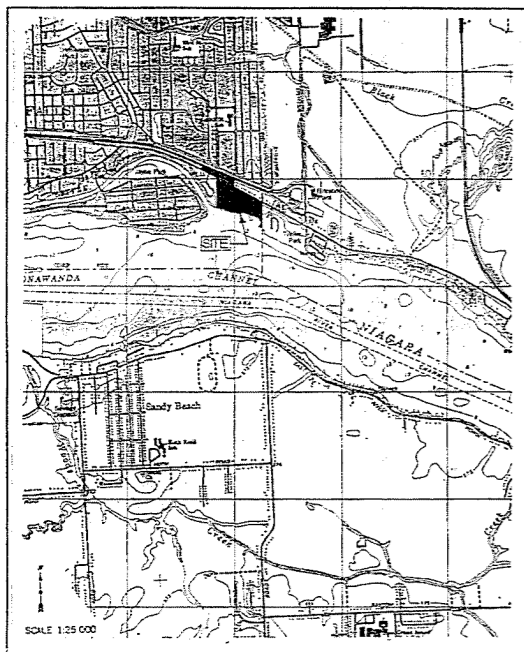
<p><b>FLUOR DANIEL</b></p> <p>1000 WEST 10TH STREET, SUITE 100          BUFFALO, NY 14202          TEL: 716-835-1000          FAX: 716-835-1001          WWW.FLUIDANIEL.COM</p>	<p><b>REMEDIAL ACTION</b>          TRIANGULAR AREA NORTH OF BUFFALO AVE          102ND STREET LANDFILL SITE          NIAGARA FALLS, NEW YORK</p>	<p><b>ENLARGED SITE REMEDIATION PLAN</b></p>
<p>PROJECT NO: 594000-30L-03</p> <p>DATE: 10/15/03</p> <p>SCALE: AS SHOWN</p>	<p>DESIGNED BY: L. COLLEEN</p> <p>CHECKED BY: L. COLLEEN</p> <p>APPROVED BY: L. COLLEEN</p>	<p>DATE: 10/15/03</p> <p>SCALE: AS SHOWN</p>

# REMEDIAL ACTION

## TRIANGULAR AREA NORTH OF BUFFALO AVENUE

### 102nd STREET LANDFILL SITE

### NIAGARA FALLS, NEW YORK



LOCATION MAP

PREPARED FOR

**OCCIDENTAL CHEMICAL CORPORATION**  
**360 RAINBOW BOULEVARD SOUTH**  
**NIAGARA FALLS, NEW YORK 14302**

**OLIN CHEMICALS**  
**LOWER RIVER ROAD**  
**CHARLESTON, TENNESSEE 37310**

**LEGEND**

- AREAL EXTENT OF SURFICIAL EXCAVATION
- EXISTING FENCE
- NEW 6" FENCE W/ 6 MIL POLYETHYLENE SHEETING
- EXISTING CATCH BASIN
- EXISTING UTILITY POLE
- EXISTING BUILDING W/ BUFFALO AVENUE ADDRESS
- REFLECTIVE TRAFFIC BARRELS
- PROPOSED TRUCK ROUTE
- TRUCK FOR ILLUSTRATING TRAFFIC PATTERN
- EXISTING 8" STORM SEWER
- EXISTING 8" GAS MAIN
- EXISTING 8" WATER MAIN
- EXISTING TELEPHONE CABLE
- OVERHEAD ELECTRIC UTILITY LINE

**LIST OF DRAWINGS**

DWG. NO.	TITLE
594000-30L-01	COVER SHEET
594000-30L-02	MASTER SITE REMEDIATION PLAN
594000-30L-03	ENLARGED SITE REVEDIATION PLAN

**GENERAL NOTE:**

1. ALL WORK SHOWN ON THESE DRAWINGS SHALL BE ACCOMPLISHED IN ACCORDANCE WITH THE REQUIREMENTS OF THE FOLLOWING SPECIFICATION SECTIONS:

TITLE	SECTION
SPECIAL REQUIREMENTS	01000
SUMMARY OF WORK	01010
MEASUREMENT AND PAYMENT	01025
HEALTH AND SAFETY	01100
EQUIPMENT CLEANING	01120
INSPECTION AND TESTING SERVICES	02006
TOPOGRAPHIC SURVEY	02022
CLEARING	02111
EARTHWORK	02201
CHAIN LINK FENCE	02634



REV.	DATE	REVISION DESCRIPTION	DESIGNED	CHECKED	APPROVED	DATE	REVISION DESCRIPTION	DESIGNED	CHECKED	APPROVED	DATE	REVISION DESCRIPTION
0	9/7/92	SUBMITTED WITH REMEDIAL DESIGN DOCUMENT FOR REVIEW/APPROVAL										
1	2/6/93	ISSUED FOR CONSTRUCTION										
2	5/14/93	ISSUED FOR BIDS										

**FLUOR DANIEL**

REMEDIAL ACTION  
 TRIANGULAR AREA NORTH OF BUFFALO AVE  
 102nd STREET LANDFILL SITE  
 NIAGARA FALLS, NEW YORK

**COVER SHEET**

DESIGNED BY L. BELL	CHECKED BY J. DEANE	DATE 2/6/93
APPROVED BY J. DEANE	DATE 2/6/93	
DRAWN BY L. BELL	DATE 2/6/93	
CHECKED BY J. DEANE	DATE 2/6/93	
SCALE AS SHOWN		

DRAWING NO. 594000-30L-01

Solicitation No. \_\_\_\_\_

**102ND STREET LANDFILL SITE  
NIAGARA FALLS, NEW YORK**

**REMEDIAL PROGRAM FOR OFF-SITE SOILS  
TRIANGULAR AREA, NORTH OF BUFFALO AVENUE**

**EXHIBIT H**

**CONSTRUCTION SPECIFICATIONS**

## SPECIAL REQUIREMENTS

### 1.0 DESCRIPTION OF WORK - GENERAL

Except as otherwise expressly provided herein, Contractor shall supply all labor, supervision, installed and consumable materials, equipment, tools, services, and each and every item of expense necessary for the Triangular Area north of Buffalo Avenue (jobsite) remedial construction, a component of the 102nd Street Landfill Site (Site) Remedial Action herein called the Work.

### 2.0 SPECIFICATIONS, DRAWINGS AND EXHIBITS

All Work shall be performed in strict accordance with the following described specifications, drawings and other documents, which by this reference are made a part hereof.

#### 2.1 Specifications

<u>Specification No.</u>	<u>Rev. No.</u>	<u>Title</u>
01000	1.0	Special Requirements
01010	1.0	Summary of Work
01025	1.0	Measurement and Payment
01100	1.0	Health and Safety
01120	1.0	Equipment Cleaning
02006	1.0	Inspection and Testing Services
02022	1.0	Topographic Survey
02111	1.0	Clearing
02201	1.0	Earthwork
02834	1.0	Chain Link Fence-Galvanized

#### 2.2 Drawings

<u>Drawing No.</u>	<u>Rev. No.</u>	<u>Title</u>
594000-30L-01	2	Cover Sheet
594000-30L-02	2	Master Site Remediation Plan
594000-30L-03	2	Enlarged Site Remediation Plan

#### 2.3 Attachments

<u>Exhibit</u>	<u>Title</u>
F	Remedial Action Health and Safety Plan (HASP) Milestone Report No. 4, Off-Site Soils Survey, Rev. 1, Oct. 1988
I	
J	Fill Material Cell Management Plan, August 16, 1991.



## **SPECIAL REQUIREMENTS**

### **3.0 TEMPORARY CONSTRUCTION FACILITIES AND UTILITIES**

Contractor shall, as part of the Scope of Work, supply, install, properly maintain, and remove all temporary construction facilities and utilities necessary for full and complete performance of the Work. Such items shall include, but not necessarily be limited to those listed below. The type of facilities, move-in and move-out dates, and locations on jobsite shall be subject to and in accordance with the review and approval of the Owner.

1. Temporary sanitary facilities
2. Construction aids and first aid facilities
3. Fuels and lubricants
4. Transportation facilities on and off site
5. Telephone Service
6. Maintenance of Contractor's storage and Work areas and roads within such areas
7. Electric panel and distribution wiring, including connections to and disconnections from the power source
8. Temporary electric service and lighting
9. All standard expendable or consumable construction items and supplies
10. Containers, cups and drinking water
11. Office at the Site
12. Water
13. Security
14. Temporary snow and/or light gauge chain link fencing

#### **3.1 Office at the Site**

During the performance of this contract, Contractor shall maintain a suitable office trailer at the Site which shall be the headquarters of his Superintendent authorized to receive drawings, instructions, or other communication or articles. Any communication given to the said representative or delivered at Contractor's office at the Site in his absence shall be deemed to have been delivered to Contractor.

Copies of the drawings, specifications, and other contract documents shall be kept at Contractor's office at the Site and available for use at all times.

The office shall be provided with an outside entrance door with a suitable lock, glazed windows suitable for light and ventilation, and adequate heating, air conditioning, and lighting facilities. Contractor shall pay all electricity and heating bills and shall provide telephone services as specified herein. The Contractor shall provide the Owner with a desk, a four-drawer filing cabinet, a worktable, two chairs, a plan rack, and a locker for storage. The doors on the locker shall be equipped for padlocking. The general arrangement of the office and facilities provided shall be acceptable to the Owner. Location of the office trailer shall be at the Site, as indicated on the drawings.

## **SPECIAL REQUIREMENTS**

### **3.2 Water**

All water required for equipment cleaning and personal hygiene and in connection with the Work to be performed shall be potable and shall be provided by and at the expense of Contractor. No separate payment for water used or required will be made and all costs in connection therewith shall be included in the Contract Price.

A drinking water dispenser, paper cup dispenser and paper cups shall also be provided by Contractor in the onsite office trailer. Contractor shall monitor use and provide replacement supplies when needed.

### **3.3 Temporary Electric Service and Lighting**

The Contractor shall arrange with the utility company to provide the temporary electric service required for power and lighting including that needed by the office and trailer air conditioner. It is expected that the office trailer will require 50 amperes at 120/240 volts, 60 hertz, 3-wire. There is an existing power drop at the Site.

The Contractor shall provide and install electrical panel, circuit breakers and distribution wiring so that power and lighting is available throughout the Work in sufficient capacity to carry out the Work and to properly secure the Work area and office trailer.

The Contractor shall furnish and install all temporary lighting required for the execution of the Work.

### **3.4 Telephone Service**

Contractor shall make all necessary arrangements with the local telephone company and pay all installation charges for temporary telephone service for his own use and the use of the Owner. The Owner will require one (1) voice line.

The telephone service and instrument in the office shall be a touch-tone system. The telephone service shall be in the name of the Contractor. The Owner will reimburse the Contractor for Owner calls.

### **3.5 Temporary Sanitary Facilities**

Contractor shall furnish temporary sanitary facilities at the jobsite, as provided herein, for the needs of all construction workers, Owners staff, Agency oversight personnel, visitors and others performing work or furnishing services on the Project.

Temporary sanitary facilities shall be of reasonable capacity, properly maintained throughout the construction period, and obscured from public view to the greatest practical extent. If toilets of the chemically treated type are used, at least one toilet

## **SPECIAL REQUIREMENTS**

will be furnished for each 20 persons. Contractor shall enforce the use of such sanitary facilities by all personnel at the jobsite.

Contractor shall furnish a portable shower unit at the work site, including all necessary water and heat, if required. The shower unit will be used for emergency purposes in the event of chemical exposure to site personnel. The shower shall be fitted with a water collection tank that has adequate capacity for its intended purpose. All waste water shall be pumped from the collection tank and transported by the contractor to the storage tank at the 102nd Street Landfill Site. Occidental Chemical Corporation shall be responsible for treatment of the waste water once it has been placed in the storage tank. The Contractor shall be responsible for cleaning and removing the portable shower unit from the work site upon completion of the work.

### **3.6 Construction Aids and First Aid Facilities**

Contractor shall furnish, install, maintain and operate all construction aids and first aid facilities required by Contractor and its Subcontractors in the performance of the Work, except as otherwise provided herein.

## **4.0 MAINTENANCE OF TRAFFIC**

Contractor shall conduct his work to interfere as minimally as possible with public travel along Buffalo Avenue (River Road) and the LaSalle Expressway, whether vehicular or pedestrian.

Trucks used for the Work, under no circumstances, may line up, wait, or park on Buffalo Avenue or the LaSalle Expressway during the Work. The Contractor shall maintain at all times a smooth flow of traffic thru Buffalo Avenue and the LaSalle Expressway. Whenever construction vehicles enter or leave the area of Work, flagmen shall be present, as needed, to assure a smooth and safe transition.

All open trenches and other excavations shall have suitable barricades, signs, and lights to provide adequate protection to the public. Obstructions such as material piles and equipment shall be provided with similar warning signs and lights.

All barricades and obstructions shall be illuminated with warning lights from sunset to sunrise. Material storage and conduct of the Work on or alongside Buffalo Avenue shall cause the minimum obstruction and inconvenience to the traveling public.

All barricades, signs, lights and other protective devices shall be installed and maintained in conformity with applicable statutory requirements and, as required by the authority of the City of Niagara Falls, N.Y.

## **SPECIAL REQUIREMENTS**

### **5.0 FENCING**

All existing fences affected by the Work shall be maintained by Contractor until completion of the Work. Fences which interfere with construction operations shall not be relocated or dismantled until written permission is obtained from the Owner, and the period the fence may be left relocated or dismantled has been authorized.

Temporary and readily removable sections of snow fencing and/or light gauge chain link fencing will be installed at each end of the area representing the portion to be completed in one normal work day to delineate the Work Zone. On completion of the Work, the Contractor shall restore all damaged existing fences to their original or to a better condition and to their original location as indicated on drawings.

### **6.0 PROTECTION OF PUBLIC AND PRIVATE PROPERTY**

Contractor shall protect, shore, brace, support and maintain all underground pipes, conduits, drains, and other underground construction uncovered or otherwise affected by his construction operations. All pavement, surfacing, driveways, curbs, catch basins, manholes, walks, buildings, utility poles, guy wires, fences, and other surface structures affected by construction operations, together with all grass and shrubs in parkings, shall be restored to their original condition, whether within or outside the Work area. All replacements shall be made with new materials.

Contractor shall be responsible for all damage to Buffalo Avenue and the LaSalle Expressway, including, but not limited to shoulders, ditches, embankments, culverts, and other public or private property, regardless of location or character, which may be caused by transporting equipment, materials, or personnel to or from the Work or any part or jobsite thereof, whether by the Contractor or its Subcontractors. Contractor shall make satisfactory and acceptable arrangements with the owner of, or the agency or authority having jurisdiction over, the damage property concerning its repair or replacement or payment of costs incurred in connection with the damage.

### **7.0 DAMAGE TO EXISTING JOBSITE PROPERTY**

Contractor shall be held responsible for any damage to including, but not limited to utility poles/overhead electric lines, the billboard, Work, materials, or equipment because of Contractors operations and shall repair or replace any damaged structures, Work, materials, or equipment to the satisfaction of, and at no additional cost to the Owner and this contract.

### **8.0 TREE AND PLANT PROTECTION**

All trees outside of the limits of excavation shall be protected from damage as practical. Special care shall be exercised when working near the root zone.

## **SPECIAL REQUIREMENTS**

### **9.0 SECURITY**

Contractor shall be responsible for protection of the jobsite, and all Work, materials, and equipment, against vandals and other unauthorized persons.

No claim shall be made against Owner by reason of any act of an employee or trespasser, and Contractor shall make good all damage to Owner's property resulting from his failure to provide security measures as specified. The Contractor shall be responsible for overseeing and maintaining a log-in/log-out record monitoring all jobsite construction personnel and jobsite visitors.

### **10.0 HAUL ROAD**

The Contractor shall establish temporary haul road(s) to various parts of the Work Zone as required to complete the Work. The existing roads within the 102nd Street Landfill Site shall be maintained during the period of execution of the Work activities associated with the Work described herein or in the Drawings. The specifications for the haul road(s) in the Triangular Area Work Zone are provided on the Drawings.

### **11.0 PARKING**

Contractor shall maintain suitable parking areas at the 102nd Street Landfill Site, as designated by the Owner, for the use of all construction workers and others performing work or furnishing services in connection with the Work, as required to avoid any need for parking personal vehicles where they may interfere with public traffic, along Buffalo Avenue and/or the LaSalle Expressway, Owner's operations, or construction activities. In addition, the Contractor shall provide three (3) spaces and two (2) spaces for the EPA/State, adjacent to the trailer for the Owner. The Contractor shall place gravel and geotextile, as required, to provide parking areas that are not subject to adverse rutting during wet conditions.

### **12.0 DUST CONTROL**

Contractor shall take reasonable measures to prevent dust which will be monitored by the Contractor. Earth surfaces subject to dusting shall be kept moist with water or by application of an acceptable dust suppressant, as approved of by the Owner. Dusty materials in piles or in transit shall be covered to prevent blowing. Limits for airborne particles are provided in the HASP.

**End of Specification**

## SUMMARY OF WORK

### 1.0 GENERAL

#### 1.1 Description of Project

Occidental Chemical Corporation (OxyChem) proposes to undertake the remediation of the "Triangular Area" at the 102nd Street Landfill Site (Site).

#### 1.2 Location

The Site of the Works is located in the State of New York in the City of Niagara Falls at the OxyChem 102nd Street Landfill Site. The Site is located along Buffalo Avenue (River Road).

#### 1.3 Access to the Site

Access to the Site is via Buffalo Avenue. The Contractor shall be responsible for all necessary arrangements with the authority having jurisdiction for the movement of material and equipment to and from the Site over public roadways.

#### 1.4 Job Site Description

The area to be remediated by the Contractor, i.e., Triangular Area, is part of the 102nd Street Landfill Site OU-1. It is a narrow triangular parcel of land varying in width from approximately 10 feet to 125 feet (west to east) approximately 1110 feet long, bordered on the south by Buffalo Avenue and on the north by the LaSalle Expressway. The northern boundary of the Triangular Area is physically delineated by a chain link fence running along the right-of-way of the LaSalle Expressway. The northern edge of pavement of Buffalo Avenue defines the southern boundary of the Triangular Area. The eastern limit of the Triangular Area is located half the distance between sampling grid vectors J and K of the Milestone Report No. 4, as indicated on the Drawings. The western boundary has no physical demarcation; it shall be an assumed line perpendicular to Buffalo Avenue beginning at a point which is approximately 500 feet west of the northwest corner of the Site and extending to a point on the alignment of the fence along the LaSalle Expressway right-of-way.

The surface of the Triangular Area slopes gently (one (1) percent or less) to the south and east. The majority of this area is vegetated with grass and trees. Most of the trees are located in the westerly portion of the Triangular Area.

The selected remedial action for the 102nd Street Landfill Site located in Niagara Falls, New York was presented in the Record of Decision (ROD) issued on September 26, 1990. The Remedial Action chosen in accordance with the requirements of the comprehensive Environmental Responses, Compensation, and Liability Act of 1980 (CERCLA), as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA), and the National Oil and Hazardous Substance Pollution Contingency

## SUMMARY OF WORK

Plan (NCP) addresses three Operable Units (OUs). These Contract Documents address only one of the OUs, i.e., OU-1, which is briefly described below:

**OU-1:** Landfill residuals including on-site fill, "off-site" soils, shallow ground water, and non-aqueous phase liquids (NAPL). For purposes of these Contract Documents, "off-site" soils are located on the triangular plot of land (Triangular Area) adjacent to the Site, north of Buffalo Avenue and south of the LaSalle Expressway as indicated on the Drawings.

The purpose of the Remedial Action for OU-1 is to consolidate off-site soils onto the 102nd Street Landfill Site. The extent of chemical contamination above threshold values was determined by CRA/WCC and reported in Milestone Report No. 4, Off-Site Soils Survey, Rev. 1, October 1988. A copy of the milestone report is included in Attachment D of these Contract Documents.

### 1.5 Scope of Work

The Works to be performed under this Contract consist of remediating the Triangular Area (jobsite) and placement of all materials from the jobsite onto the OxyChem Fill Material Placement Cell (Cell) located at the 102nd Street Landfill Site.

### 1.6 Submittals

The Contractor shall submit to the Owner two (2) copies each of the following documents. If the Owner deems any of these documents unacceptable, the Contractor shall revise the document(s) at his expense and resubmit them to the Owner.

1. Plan of Operation. Contractor shall be responsible for submittal of the Remedial Action Plan of Operation that will define a detailed sequence of construction to perform the work at the jobsite. The Remedial Action Plan of Operation shall be submitted to the Owner within 15 calendar days after receiving Notice to Proceed. Approval of this document by the Owner is a requirement for project initiation.
2. Contractor's Health and Safety Plan. Contractor shall prepare a Contractor's Health and Safety Plan (CHASP) for its employees' work at the jobsite. A copy of the Owner's Health and Safety Plan (HASP) is included as Exhibit F for reference only. The Contractor may use the HASP, as a minimum basis, for preparation of the CHASP.
3. As-Built Drawings. The Contractor shall maintain two sets of red-lined full scale as-built construction drawings marked-up to fully indicate as-built conditions. These drawings shall be maintained in a current condition at all times until completion of the Work and shall be available for review by the Owner at all

## SUMMARY OF WORK

times. Both sets of as-built construction drawings shall be furnished to the Owner on the date of final inspection. The as-built drawings will not be returned to the Contractor.

4. Surveys and Computations. The Contractor shall make such surveys and computations as are necessary to determine the quantities of work performed or placed during each period for which a progress payment is to be made. The Contractor shall make original surveys as required prior to commencing Work on the jobsite.
5. Borrow Material Analyses Results. The Contractor shall collect and analyze representative samples of the borrow materials and all imported soil to be placed on the jobsite. Laboratory tests shall include parameters on the Target Compound List/Target Analyte List (TCL/TAL), gradation tests (sieve and hydrometer), soil classification, and Standard Proctor density and moisture content relationships for each soil type and borrow source.

### 1.7 Description of Work

Construction activities (Work) will be monitored by the Owner. It shall be the responsibility of the Contractor to ensure that all Work is conducted in accordance with the Contract Documents and to accomplish the remedial objective.

- A. The Contractor's scope for remediation of the off-site soils within the Triangular Area include, but are not limited to, the following items:
  1. provision of construction facilities;
  2. preparation of Contractor's Health and Safety Plan (CHASP);
  3. removal of trees and shrubs;
  4. fencing/demarcation of Work Zone;
  5. control of traffic;
  6. management of stormwater;
  7. construction of temporary haul road(s);
  8. excavation of soil, asphalt and gravel paving;
  9. transportation of trees, shrubs and excavated materials to the Fill Material Placement Cell;
  10. backfilling, compaction and revegetation of excavation;
  11. restoration of existing fencing;
  12. topographic survey;
  13. erosion and sediment control;
  14. equipment cleaning; and
  15. miscellaneous Site Work.



## SUMMARY OF WORK

B. The Contractors Work does not include the following items:

1. sampling and testing of soils to verify excavation depth,
2. procurement of Site related property access agreements,
3. quality assurance testing, and
4. construction of the Fill Material Placement Cell at the 102nd Street Landfill Site.

### 1.8 Permitting/Approvals/Agreements

The following permits and access agreements will be obtained by the Contractor prior to initiation of Work activities. The Owner shall assist the Contractor, as required, to obtain these permits and access agreements by, including but not limited to, providing information regarding schedule, equipment, operations, and insurance and bonding certificates.

1. Traffic relocation/temporary sign permits from City of Niagara Falls.
2. Permit to Encroach Upon City Property from the City of Niagara Falls.
3. Permit to Encroach Upon Utility Easement.

It shall not be necessary to obtain a permit for hauling excavated soil across Buffalo Avenue since it has been determined in the ROD that the Triangular Area is considered part of the 102nd Street Landfill Site.

### 1.9 Delivery

No materials or equipment of any kind shall be delivered to the jobsite or the Site until approval in writing has been applied for and obtained by the Contractor from the Owner that such materials or equipment may be delivered.

Delivery of materials shall be protected from contamination prior to and during use in the Work.

### 1.10 Quality Control

The Owner shall have access to the Work at all times.

Independent testing agencies may be engaged by the Owner for the purpose of inspecting and/or testing portions of the Work.

**End of Specification**

## **MEASUREMENT AND PAYMENT**

### **1.0 SCOPE**

This section covers methods of measurement and payment for items of Work under this Contract.

### **2.0 GENERAL**

The Contract Price shall cover all Work required by the Contract Documents. All costs in connection with the proper and successful completion of the Work, including furnishing all materials, excavation, transportation to and placement in the Fill Material Placement Cell of the 102nd Street Landfill Site, importation of clean fill, equipment, supplies, and appurtenances; providing all construction equipment and tools, and performing all necessary labor and supervision to fully complete the Work, shall be included in the Contract Price. All Work not specifically set forth as a pay item in the Bid Form shall be considered a subsidiary obligation of Contractor and all costs in connection therewith shall be included in the contract price.

### **3.0 MOBILIZATION AND DEMOBILIZATION**

Mobilization shall include all costs involved in establishing the construction operation at the jobsite; insurance; Contractor's Health and Safety Plan; Remedial Action Plan of Operation; temporary construction facilities and utilities and other special requirements; subgrade preparation for gravel roads; gravel roads and construction office areas and parking; topographic survey; laboratory testing; and similar items shall be included.

Measurement is lump sum.

### **4.0 CLEARING**

Clearing shall include, but is not limited to, removing and hauling all trees, trunks, limbs, debris and brush from the limits of excavation, and chipping and disposal at the Fill Material Placement Cell.

Measurement is lump sum.

## **MEASUREMENT AND PAYMENT**

### **5.0 SITE WORK**

Site Work includes all costs associated with developing the jobsite for the Work and includes, but is not limited to, constructing erosion and sediment control devices, and providing temporary fences and gates.

Measurement is lump sum.

### **6.0 EQUIPMENT CLEANING FACILITIES**

Equipment cleaning facilities shall include the provision, installation and maintenance of cleaning facilities for field personnel, equipment and vehicles including but not limited to the cleaning pads; vehicle cleaning equipment; cleaning water storage tanks; and cleaning of all vehicles and equipment as required. The collection and transportation to OxyChem's Buffalo Avenue Plant for offsite disposition of cleaning water shall be an incidental cost for this item. Costs associated with treatment of water (if necessary) will be the responsibility of the Owner.

Measurement is lump sum.

### **7.0 JOBSITE DEMOLITION/RESTORATION**

Jobsite Demolition/Restoration shall include all costs associated with final removal of all jobsite facilities and restoration to prior existing grades and include but is not limited to: removing all gravel and paved areas and roads, storage, trailers; removing all temporary fencing, and silt fences; regrading all areas to prior existing contours, temporary and permanent grass seeding; removing all construction equipment, utilities and supplies; and removing and reinstalling the existing chain link fencing.

Measurement is lump sum.

### **8.0 EXCAVATION**

Excavation of soil and other materials shall include all costs associated with excavating soil and other materials, transportation in lined and covered trailers, and placement at the existing Fill Material Placement Cell at the 102nd Street Landfill Site. This item will include but not be limited to construction of temporary berms, swales, silt fences and stormwater collection basins; onsite collection and storage of stormwater; excavating soil to a depth of 18 inches and limits as depicted on the Drawings; covering excavation area with polyethylene sheets; transportation to the Fill Material Placement Cell, placement and compaction of excavated soils and cover with geotextile fabric and 2± inches of soil. The Contractor is responsible for performing air monitoring at the work site perimeter and at the work zone, per the CHASP.

## MEASUREMENT AND PAYMENT

### 8.0 EXCAVATION (cont'd)

The quantity of materials shall be cubic yards as computed by the method of average end areas, which areas shall be based on cross-sections taken of the original ground prior to excavation, and sections taken after materials have been excavated to a depth of 18 inches. Cross sections will be taken at regular intervals and at breaks in grade. Excavation quantities for final payment shall be measured and computed by a New York licensed surveyor retained by the Contractor. Excavation quantities for progress payments shall be measured and computed by the Contractor. Such measurements and computations shall be taken in a manner approved by the Owner or by a New York licensed surveyor retained by the Contractor. Costs associated with such measurement and computations shall be an incidental cost to the Contractor. The Contractor shall notify the Owner a minimum of 24 hours prior to conducting such surveys to allow the surveyor retained by the Owner to be present for coordination, if required by the Owner.

Measurement of required excavation to a depth of 18 inches (limits indicated on the Drawings) is lump sum. Additional cubic yards, deeper than 18 inches, within the excavation limits indicated on the Drawings, shall be measured and computed as described above, and shall be paid for at the contract unit price bid per cubic yard. Price and payment shall include full compensation for all labor, materials, laboratory testing, equipment, tools, health and safety, and incidentals to complete this item.

### 9.0 IMPORTED FILL

Imported fill shall include providing suitable, pre-approved "clean" backfill from off-Site sources and placing and compacting to prior existing lines and grades. Imported fill will also be required for placement of up to a two (2)-inch soil cover over excavated materials placed at the Fill Material Placement Cell. This material shall be clean and pre-approved. Costs associated with obtaining samples of imported fill materials and performing physical and chemical testing shall be included in Section 9.0. Final grading and grass seeding shall be paid under Section 7.0, Jobsite Demolition/Restoration.

Measurement of required imported fill is lump sum. Imported fill required beyond the quantities essential to backfill the excavated area indicated on the Drawings, shall be measured and paid for by the cubic yard placed in situ. Volumes shall be measured as described in Section 8.0 above, and shall be paid for at the contract unit price bid per cubic yard. Price and payment shall include full compensation for all labor, equipment, tools and incidentals to complete this item.

End of Specification

## HEALTH AND SAFETY

### 1.0 Introduction

All Work performed at the Triangular Area or the 102nd Street Landfill Site shall be done in conformance with a Contractor's Health and Safety Plan (CHASP), prepared by the Contractor and to be approved by the Owner. Two (2) copies of the CHASP shall be submitted to the Owner for approval a minimum of 10 calendar days prior to commencement of Work. Work at the Site will not commence until the Owner has approved the CHASP. Any delays and associated costs that are a result of an unapproved CHASP shall be the responsibility of the Contractor.

A copy of the Owner's Health and Safety Plan (HASP) is included as Exhibit F, for reference only and the Contractor may use the HASP as a minimum basis for preparation of the CHASP. The Owner will conduct air sampling and monitoring at the Job Site.

All personnel, irrespective of work location at the Site, shall wear the Personal Protective Equipment (PPE) as specified in the CHASP.

### 2.0 Health and Safety Program Requirements

Contractor's personnel performing Work at the Site or in support of this Contract shall perform all Work in strict conformance with the approved CHASP.

Contractor's personnel performing Work at the Site shall be required to attend a four-hour Information Training program, provided by the Owner, before initiating activities at the Site.

Contractor's personnel shall meet the requirements of the CHASP and follow the directions of the Owner's Health and Safety Representative (HSR) to protect personnel and/or the environment.

The Contractor shall certify, in writing, the understanding and intent to comply with all relevant requirements contained in the HASP and 29CFR1910.120, including, but not limited to, those requirements addressing training and medical surveillance.

The Owner requires that all Contractor's personnel operating at the Work Site have health and safety programs of the type required in 29CFR1910.120, including but not limited to medical surveillance and training programs. As part of this program, the Contractor shall fulfill the following requirements:

1. Ensure that all employees working on the on the Triangular Area/102nd Street Landfill Site have obtained a comprehensive medical examination performed for the express purpose of qualifying them for work in hazardous waste operations. This physical examination, paid for by the Contractor, shall include tests to certify an employee's ability to wear a respirator. Before commencing Work and within five (5) calendar days from date of contract award, the Contractor is required to provide the Owner with a physician's statement medically qualifying each of their employees.

## **HEALTH AND SAFETY**

2. Prepare employees, through required training paid for by Contractor, to perform their respective activities in respiratory protection up to and including Level C, full-facepiece respirator.
3. The Health and Safety Plan (HASP) requires that a Health and Safety Representative be onsite during construction activities. The active Work area(s) will be continuously monitored to ensure that the worker's exposure to chemical contaminants is maintained at an acceptable level. Dust, Mercury and volatile organics will be monitored by the Owner. Work Zone monitoring will be required to ensure that excessive concentrations do not exist in the Workers' breathing zone.

Specific requirements are presented in the HASP.

### **3.0 Personal Protection Equipment Level**

All Site personnel shall be required to perform Work in PPE Level D+, as a minimum. Level D is defined below and in the HASP:

- a. One-piece work coverall (cotton or synthetic)
- b. Work boots that meet or exceed ANSI Z41.1
- c. Hard hat
- d. Safety glasses w/side shields

Note: Level D+ includes all requirements for Level D above plus disposable outer coveralls (Tyvek or equivalent), inner gloves and chemically protective outer gloves.

The Contractor shall provide his personnel with all required Personal Protection Equipment, including PPE Level C and Level B, if required by the Work.

It is anticipated that all Work may be performed in PPE Level D+, however due to the uncertainty of encountering hazardous materials, the Contractor shall have the required equipment available to upgrade to PPE Level C.

**End of Specification**

## **EQUIPMENT CLEANING**

### **1.0 INTRODUCTION**

The Contractor shall perform all Work at the Triangular Area and the 102nd Street Landfill Site in such a manner as to minimize, as is practical, the potential for contamination of equipment with hazardous materials.

### **2.0 EXECUTION**

#### **2.1 Haul Road(s)**

A gravel haul road(s) shall be constructed at the Triangular Area to permit trucks and other equipment to pass over the ground without coming into contact with existing fill soil materials.

#### **2.2 Contaminant Reduction Zone (CRZ)**

The area actively being excavated shall be kept to a minimum. Excavation and filling of the haul trucks shall be done in a manner to avoid soiling of the area adjacent to the excavation and the exterior of the truck. The truck loading area, under the truck, shall be covered with multiple sheets of 6-mil polyethylene film (sheet). This area shall constitute the Contaminant Reduction Zone (CRZ).

No vehicles or personnel shall leave the CRZ without receiving approval from the Site Representative.

#### **2.3 Cleaning of Haul Trucks**

During loading of excavated soils, the haul trucks (tractor and trailer) shall be draped with 6-mil polyethylene sheets to minimize soiling of the exterior of the truck. After the truck is loaded, the sheets shall be pulled back over the material in the trailer and the truck exterior, including wheels/tires, undercarriage, tractor and trailer shall be inspected for possible dust and soiling. If dust/soil is observed on the truck, the Contractor shall remove the material using physical methods such as scrapping and brushing. All materials removed in such a manner shall be placed in the trailer, beneath the polyethylene sheets. Water shall not be used to clean the haul trucks unless the Contractor is directed to do so by the Owner.

Trucks used to haul clean fill, from off-site sources, shall not be allowed to come into contact with the sides/bottom of the excavation. If the truck must enter the excavation, then it shall first back dump clean soil into the excavation before entering the excavation. This should prevent soiling of these trucks. If the truck becomes soiled, then it shall be cleaned in a similar manner as the excavation haul truck.

## **EQUIPMENT CLEANING**

### **2.4 Cleaning of Excavation Equipment**

After excavation of Triangular Area soils is completed, the excavation equipment shall be cleaned using the following techniques:

1. The equipment shall be driven over multiple sheets of 6-mil polyethylene and as much soil as practical shall be scraped and brushed from the exterior of the equipment.
2. The equipment shall then be loaded onto flatbed trailers, completely encased with 6-mil polyethylene sheets and tarps, and transported to the OxyChem Buffalo Avenue facility for cleaning with water. After the equipment has been thoroughly cleaned and inspected by the Owner, it shall be released to the Contractor. Loading, covering with plastic/tarps, transportation, and unloading/loading will be at the cost of the Contractor.

The Contractor shall be responsible for cleaning all equipment and failure to do so and receive approval from the Owner shall be at the cost of the Contractor.

Any waste water generated as a result of equipment cleaning at the OxyChem Buffalo Avenue facility will be treated by OxyChem at no cost to the Contractor.

If waste water is generated at the Triangular Area and/or 102nd Street Landfill Site, it shall be treated by OxyChem at no cost to the Contractor. The Contractor shall be responsible for transporting all waste water generated at the Triangular Area and/or 102nd Street Landfill Site to a holding tank at the 102nd Street Landfill Site. The Contractor shall secure approval from the Owner before placing any waste water in the holding tank.

### **3.0 MONITORING**

The Contractor shall provide personnel monitoring, if necessary, during cleaning operations to identify any potential adverse health condition which may occur due to cleaning operations. Such monitoring may include, but not limited to, air monitoring, wipe sampling of equipment, and waste sampling. Monitoring requirements and procedures are provided in the HASP.

### **4.0 RECORDS**

The Contractor shall maintain records of cleaning activities over the duration of the Work and submit them to the Owner upon request.

**End of Specification**



## INSPECTION AND TESTING SERVICES

### 1.0 DESCRIPTION OF WORK - GENERAL

An Independent Inspection and Testing Agency may be engaged by the Owner for the purpose of inspecting and/or testing portions of the Work. Inspection and/or testing of Work may include but not be limited to:

1. depth of excavation;
2. volume of excavated and backfill materials;
3. material properties; and
4. compaction.

This specification identifies work to be accomplished by the Contractor, and the independent testing agency under the direction of the Owner.

### 1.1 REFERENCES

The publications listed below form part of this specifications. Each publication shall be the latest revision and addendum in effect on the date this specification is issued for construction unless noted otherwise. Except as modified by the requirements specified herein or the details of the Drawings, Work included in this specification shall conform to the applicable provisions of these publications.

#### A. *ASTM (American Society for Testing and Materials)*

1. ASTM D698 Standard Test Method for Moisture-Density Relations of Soil and Soil Aggregate Mixtures using a 5.5-lb. Rammer and a 12-inch (305 mm) Drop.
2. ASTM D1556 Standard Test Method for Density of Soil In-Place by the Sand-Cone Method.
3. ASTM D2167 Standard Test Method for Density and Unit Weight of Soil In-Place by the Rubber Balloon Method.
4. ASTM D2487 Standard Test Method for Classification of Soils for Engineering Purposes.
5. ASTM D2488 Standard Practice for Description and Identification of Soils (Visual-Manual Procedure).
6. ASTM D2922 Standard Test Methods for Density of Soil and Soil-Aggregates In-Place by Nuclear Methods (Shallow Depth).

## INSPECTION AND TESTING SERVICES

7. ASTM D3017 Standard Test Method for Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth).
8. ASTM D4318 Standard Test Method for Liquid Limit, Plastic Limit, and Plasticity Index of Soils.
9. ASTM D4253 Standard Test Methods for Maximum Index Density of Soils Using a Vibratory Table.
10. ASTM D4254 Standard Test Methods for Minimum Index Density of Soils and Calculation of Relative Density.

### 1.2 Submittals

Submit to the Owner one copy of all Daily Inspection Logs, test reports and nonconformance reports. Daily Inspection Log copies shall be submitted no later than the second workday following the date. Test reports and nonconformance reports shall be submitted within 24 hours of the completion of the test. Nonconformance reports shall be submitted to the Owner for remedial direction as soon as practical.

### 1.3 Qualifications

The Inspection and Testing Agency shall meet the technical criteria of ASTM D 3740 for agencies involved in soil and rock inspection.

## 2.0 EXECUTION

### 2.1 General

Monitor all jobsite Work involving earthwork to ascertain that all specifications, codes and standards applicable thereto are complied with. Plan for and perform inspections and tests in a timely manner so as to avoid delaying site development operations. Advise the responsible Contractor and Owner of any nonconforming condition detected as soon as practical.

#### A. *Records and Reports*

The Inspection and Testing Agency shall prepare written records of all inspections and tests made. Maintain a file of all records in a manner readily available at the jobsite.

## INSPECTION AND TESTING SERVICES

### 1. Daily Inspection Log

Prepare and maintain a written log fully describing all Work inspected each day. As a minimum include in the daily log a summary of the Work inspected each day, the weather conditions under which the Work was performed, and a summary of any nonconforming conditions detected.

### 2. Test Results

Prepare and maintain written records of the results of all field and related laboratory tests performed.

### 3. Nonconformance Report

Any nonconforming conditions detected which are not immediately brought into conformance by the Contractor shall be documented in a written report submitted to the Owner for disposition.

## 2.2 Quality Control - Inspection

The Owner shall have access to the Work at all times.

The Contractor shall give timely notification requesting inspection of Work if it is designated for special tests, inspections or approvals or by instructions of the Owner.

If the Contractor covers any part of the Work that has been designated for special tests, inspections or approvals prior to such being made, the Contractor shall uncover such work, have inspections or tests satisfactorily completed and make good such work at no additional cost to the Owner.

The Owner may order any part of the Work to be examined if such work is suspected to be not in accordance with the Contract Documents and Specifications. If, upon examination such work is found not to be in accordance with the Contract Documents and Specifications, the Contractor shall correct such work and pay the cost of examination and correction. If such work is found to be in accordance with the Contract Documents and Specifications, the Owner will pay the cost of examination and replacement.

## 2.3 Earthwork

### A. General

Monitor all earthwork operations including excavation, fill and backfill to verify that all existing soils exposed by the Work and borrow materials furnished are suitable for use and that the Work is accomplished in accordance with all

## INSPECTION AND TESTING SERVICES

applicable specifications, codes and standards. All inspection and testing of earthwork shall be performed by or under the direct supervision of a registered engineer qualified to perform geotechnical engineering.

### B. *Compaction Control*

#### 1. Laboratory Control

The Contractor shall, for each different soil material to be used as compacted backfill, determine the following:

<u>Parameter</u>	<u>Laboratory Test</u>	<u>Frequency</u>
Maximum density and optimum moisture content	ASTM D698	One test per 5,000 cubic yards to be placed
Grain size distribution	ASTM D422	One test per 1,000 cubic yards to be placed
Moisture content	ASTM D2216	One test per 1,000 cubic yards to be placed
Atterberg limits	ASTM D4318	One test per 5,000 cubic yards to be placed
Soil classification	ASTM D2487	One test per 5,000 cubic yards to be placed
Target Analyte List (TAL)/Target Compound List (TCL)	EPA Method SW-846	One test per 1,000 cubic yards to be placed, or fraction thereof, and from each borrow source

The Contractor shall provide in writing the laboratory results for these tests to the Owner for its approval at least 15 calendar days before delivery of off-Site materials to the jobsite.

## INSPECTION AND TESTING SERVICES

### 2. Field Quality Control

The Inspection and Testing Agency shall, for each soil material to be used as compacted backfill, perform the following tests on as-placed materials:

<u>Parameter</u>	<u>Laboratory Test</u>	<u>Frequency</u>
Density	ASTM D1556, D2167, or D2922	One test per each 10,000 square feet, and fraction thereof, of each lift
Moisture content	ASTM D3017	One test per each 10,000 square feet, and fraction thereof, of each lift
Grain size distribution	ASTM D422	One per 5,000 cubic yards placed
Atterberg limits	ASTM D4318	One per 5,000 cubic yards placed

The Inspection and Testing Agency shall provide the results of these tests to the Owner within 24 hours of their completion.

**End of Specification**

## TOPOGRAPHIC SURVEY

### 1.0 DESCRIPTION OF WORK - GENERAL

All Work shall be done to the lines, grades, and elevations indicated on the drawings.

The Contractor shall be required to perform surveys and computations as necessary to determine quantities of Work performed or placed by Contractor during each period for which a progress payment is to be made. The Contractor shall also make original surveys as required prior to commencing Work on jobsite.

The Contractor shall perform calculations and setting of survey control monuments and stakes as necessary to ensure that Work shown on the Drawings conforms to the required lines, grades, and dimensions. Relate such layout to the New York State Plane coordinate Grid, elevation datum, and related survey control monuments and bench marks identified on the Drawings.

#### 1.1 References

The publications listed below form part of this specification. Each publication shall be the latest revision and addendum in effect on the date this specification is issued for construction unless noted otherwise. Except as modified by the requirements specified herein or the details of the Drawings, Work included in this specification shall conform to the applicable provisions of these publications. Coordinate Work prescribed by this specification with Work prescribed by the documents, listed below.

- A. *ANSI (American National Standards Institute)*
- B. *United States National Map Accuracy Standards*

### 2.0 PRODUCTS

#### 2.1 Certification of the Topographic Surveys

- A. The Contractor shall use a New York licensed and registered Surveyor for all surveying activities.
- B. Topographic surveys including surveys performed for determination of quantities shall be certified by the Surveyor and approved by the Contractor.

#### 2.2 Equipment

References shall be set and measurements taken using standard accepted surveying methods and equipment.

## TOPOGRAPHIC SURVEY

All original field notes, computations, and other survey records for the purposes of layout, original, progress, and final surveys shall be recorded in duplicating field books, the original pages of which shall be furnished promptly in ring binders to the Owner.

### 3.0 EXECUTION

#### 3.1 Requirements

##### A. General

Perform surveys and computations as necessary to determine quantities of Work performed or placed by Contractor during each period for which a progress payment is to be made.

Make computations as necessary to verify the quantities of Work excavated and fill in place. Quantity surveys shall be made in the presence of a representative of the Owner. The accuracy of quantity survey points shall be  $\pm 0.1$  foot horizontal and vertical.

The cross-sectional average end area method shall be used to calculate the in-place volumes.

##### B. Topographic Map

Prepare a topographic map at a scale of one inch equals 50 feet with one-foot contours of the top of the finished grade at the Triangular Area.

##### C. Construction Layout

Items of Work that require layout include, but are not limited to, the following:

1. Limits of clearing
2. Site erosion and sedimentation control measures
3. Equipment cleaning pad(s)
4. Fence and gate installations
5. Construction roads
6. Limits of excavation and fill
7. Truck access

End of Specification

## **CLEARING**

### **1.0 DESCRIPTION OF WORK - GENERAL**

Prior to commencing excavation of soils and other materials at the Triangular Area, the Contractor shall clear and remove all trees, shrubs, and debris from the extent of surficial excavation, i.e., Work Zone, as delineated on the Drawings.

All materials cleared from the jobsite shall be transported to the 102nd Street Landfill Site and placed in stockpiles identified by the Owner.

### **2.0 TREES AND SHRUBS**

All trees and shrubs contained within the Work Zone shall be removed. The portion of trees above ground shall be cut and felled in a manner to avoid disturbance of the surficial soils. Measures such as cribbing with branches cut from the trees shall be employed to avoid disturbing the ground surface.

When felling trees, the Contractor shall protect personnel and equipment at the jobsite, and existing facilities including the billboard and the overhead electric wires and poles.

Fallen trees shall be cut into sections and hauled onto the Site and stockpiled at a location identified by the Owner.

Stumps and root systems shall be removed, as part of the excavation activity (Specification 02201), to a minimum depth of 18 inches and cut into sections. Care shall be taken to limit depth of root removal beyond a depth of 18 inches or a greater depth as specified by the Owner.

Trees and shrubs outside of the Work Zone shall not be damaged, as practical to complete remediation of the Triangular Area.

### **3.0 PROTECTION OF MONUMENTS**

The Contractor shall protect benchmarks, baseline monuments, survey control points and property corners, and other temporary or permanent survey markers outside of the Work Zone from destruction or disturbance. The Contractor shall, at his own cost, accurately restore at the earliest practical date any markers destroyed or disturbed.

Within the Work Zone or within close proximity to the Work Zone, the Contractor shall properly relocate survey markers that interfere with the Work, or witness the markers and restore them after completing the Work. The Contractor shall perform survey marker relocation or restoration work under the direct supervision of a registered land surveyor.

**End of Specification**



## EARTHWORK

### 1.0 GENERAL

#### 1.1 Summary

##### A. *Scope of Specification*

This specification prescribes the requirements for excavation and fill associated with the following:

1. Installation of sediment and erosion control features.
2. Excavation of soils, asphalt pavement and gravel parking area in the Triangular Area to a minimum depth of 18 inches.
3. Transportation and placement of excavated materials in the Fill Material Placement Cell at the Site.
4. Backfilling, grading and seeding of the excavated area.
5. Placement of the excavated materials in the Fill Material Placement Cell according to the Fill Material Cell Management Plan (Exhibit J).

##### B. *Terminology*

The following terms are defined as stated, unless otherwise indicated:

1. *Soil Classification Symbols:* Symbols based on the Unified Soil Classification System as determined per ASTM D2487 or ASTM D2488.
2. *Standard Proctor Density:* The maximum dry density achieved per ASTM D698 when testing a sample of material representative of that to be compacted in the field.
3. *Optimum Moisture Content:* The moisture content at which the Standard Proctor Density is achieved.
4. *Inspection and Testing Agency:* The company, partnership, or corporation retained by the Owner to perform the inspections and tests required to determine and verify compliance of the work with the requirements of this specification.

## **EARTHWORK**

### **1.2 References**

The publications listed below form part of this specification. Each publication shall be the latest revision and addendum in effect on the date this specification is issued for construction unless noted otherwise. Except as modified by the requirements specified herein or the details of the Drawings, Work included in this specification shall conform to the applicable provisions of these publications.

#### **A. Applicable Codes**

**1. State of New York, Department of Transportation, Standard Specifications for Construction and Materials (NYDOT)**

- a. Section 610: Turf and Wildflower Establishment
- b. Section 703: Aggregates

**2. American Association of State Highway and Transportation Officials (AASHTO)**

- a. AASHTO T194: Determination of Organic Matter in Soils by West Combustion

### **1.3 Quality Assurance**

#### **A. General**

An Inspection and Testing Agency will be retained by the Owner to perform field and laboratory testing and soil evaluations to verify compliance of the Work with the requirements of this Specification and to ensure the achievement of the intents and purposes of the Work. The performance or lack of performance of such tests and inspections shall not be construed as granting relief from the requirements of these Specifications or the other Contract Documents.

### **1.4 Site Conditions**

#### **A. Existing Soil Conditions**

Existing soil conditions have been investigated by the Owner (Exhibit I-Milestone Report-No. 4). The report containing the findings, conclusions, and recommendations resulting from this investigation is by this reference made a part of these Specifications. A copy of the report is included in the Contract Documents. The information contained in the report shall not be construed as a guarantee of the depth, extent, or character of materials actually present.

## EARTHWORK

### 2.0 PRODUCTS

#### 2.1 Materials

##### A. Backfill

Acceptable backfill material for the excavation, excluding the top six (6) inches of topsoil, shall consist of a fine grained material with a minimum of 50 percent passing the No. 200 sieve and shall be classified as CL or ML under the Unified Soil Classification System (ASTM D2487). The backfill material shall be free of unsuitable materials which include, but are not limited to:

1. frozen material or material containing ice lenses;
2. refuse or debris;
3. stones or rocks larger than three (3) inches in any dimension;
4. clays classified as CH or MH according to ASTM D2487;
5. frost susceptible soils;
6. swelling clays;
7. material containing organic matter or roots; and
8. organic soils classified as OL, OH or Pt according to ASTM D2487.

##### B. Topsoil/Organic Mulches/Fertilizer

Topsoil. A minimum of six (6) inches of topsoil shall be placed over the backfill to support vegetative cover. The topsoil shall consist of natural, friable, fertile, loamy soil containing no less than 1.5 percent organic materials when tested according to AASHTO T194, and generally representative of agriculturally productive soil in the vicinity of the jobsite. Topsoil shall be free from subsoil and deleterious material that would hinder plant growth or maintenance and shall not contain more than five (5) percent by volume of stones, lumps, or other objects larger than one (1) inch in any dimension.

Organic Mulches. Organic mulches, if required, shall consist of, but not be limited to the following:

1. straw from oats, wheat, barley, or rye;
2. hay from pangola, alfalfa, bermuda, or prairie grass.

Fertilizer. Fertilizer shall be uniform in composition, free flowing, and suitable for application with approved equipment. Use of liquid fertilizer is subject to approval of the Owner prior to its use. The fertilizer shall be delivered to the jobsite in bags or other convenient containers, each fully labeled, including the following information:

## EARTHWORK

1. name and address of manufacturer,
2. name brand or trademark,
3. number of net pounds or ready mixed material in the package, and
4. chemical composition or analysis and guarantee of analysis.

If lime is required, it shall be ground limestone containing no less than 85 percent of total carbonates and ground to such fineness that 50 percent will pass through a No. 100 sieve and 90 percent will pass through a No. 20 sieve.

**Seeding.** Temporary (if needed) and permanent grass seeding types and mixtures shall be submitted to the Owner for approval prior to its use. Permanent grass mixture of seed, fertilizer, lime and mulch, application rate, planting dates, and grassing and maintenance requirements shall be as specified in Section 600 of NYSDOT Specification 610 for Construction and Materials.

### C. Granular Base Course

Granular base course material will be required for construction of the haul road at the jobsite and may be required to maintain existing access roads at the Site. Gradation of the base course for the haul and access roads shall be screened gravel meeting NYSDOT Material Designation 703-0203, No. 2 size, which is within the following limits:

<u>Size Designation</u>	<u>% Passing by Weight</u>
1 1/2"	100
1"	90-100
1/2"	0-15

### D. Cover Soil

Upon completion of placing all excavated material at the Fill Material Placement Cell at the Site, and after the materials are capped with a geotextile fabric, up to two (2) inches of soil will be placed over the materials to provide a cover and to sustain vegetative growth. This material shall be obtained from an off-Site borrow source and shall be preapproved by the Owner prior to delivery to the Site. It shall consist of a CL, ML, or loamy soil capable of sustaining vegetation.

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### **E. Geotextile Fabrics**

#### **1. Haul Road**

A woven geotextile fabric shall be placed on the ground surface before the granular base course for the haul road at the jobsite is laid. This fabric shall be as indicated on the Drawings.

#### **2. Fill Material Placement Cell**

After the excavated materials are placed in the Fill Material Placement Cell, the materials shall be capped with a geotextile fabric. This fabric shall be Bon Terra CS2/C1 or equivalent.

## **3.0 EXECUTION**

### **3.1 Examination**

#### **A. General - Site Examination**

Before starting work, thoroughly examine the site to ascertain certain conditions under which the Work must be performed. Notify the Owner of any existing conditions which might prevent the performance of the work indicated on the Drawings.

#### **B. Existing Facilities to Remain**

Take protective measures to prevent existing facilities within the Work area that are not designated for removal from being damaged by the Work. Existing facilities include, but may not be limited to, the billboard and overhead electric utility poles and wires.

### **3.2 Preparation**

#### **A. Erosion and Sediment Control**

Before starting earthwork operations on any particular area of the jobsite, install measures for the control, prevention, and abatement of erosion and accumulation of silt for that area as required by the Drawings and by any applicable federal, state, or local codes or regulations.

## **EARTHWORK**

### **B. Preceding Work**

Before start of earthwork covered by this Specification, complete required preceding work such as:

- 02110: Clearing

### **C. Construction Layout**

Unless otherwise stipulated elsewhere in the Contract Documents, the Work covered by this Specification shall include the performance of calculations, and the setting of marks and stakes necessary to ensure that the Work conforms to the required lines, grades, and dimensions. Relate such layout to the coordinate grid system, elevation datum, and related survey control monuments and bench marks identified on the Drawings or elsewhere in the Contract Documents.

## **3.3 Protection**

### **A. Survey Monuments**

Locate and protect from damage survey monuments within the Work area. Properly relocate or witness any monument that must be disturbed by the Work. After completion of the Work, restore monument witnesses.

### **B. Buffalo Avenue Utilities**

Existing underground and overhead mechanical and electrical utilities will be encountered. Contractor is responsible for suitably protecting all utilities adjacent or within the Work area. Active utilities shall be kept in service and properly protected. Any utilities damaged shall be repaired at no cost to the Owner. Provide suitable cover to avoid damage from superimposed loads.

### **C. Excavation Slopes**

Stabilize or lay back the side slopes of all excavations as necessary to prevent slope failure and damage to Buffalo Avenue, the billboard, or the overhead electric utility poles. It is suggested that an excavation side slope of 1H:1V be used adjacent to Buffalo Avenue.

## **3.4 Control of Water**

### **A. General**

Prevent or control water flow into excavations, or other accumulation in excavations, to ensure that the bottoms and sides of all excavations remain in

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a firm and stable condition throughout construction operations and water does not require collection and treatment.

### **B. Surface Waters**

Plan and conduct excavation operations so as to minimize the disruption of work. Provide diversion ditches, dikes, and other suitable measures to control and direct runoff around and away from the excavation. Protect the sides of excavations from erosion and sloughing caused by stormwater runoff. The systems and equipment for control of surface water shall be of sufficient capacity to accommodate the runoff rate that can be expected from the two (2) year (50 percent annual chance) rainfall event, with no significant disruption of the construction schedule, or damage to existing features or facilities in the vicinity of the Work. Six-mil polyethylene sheets and tarps shall be placed on/over excavations not immediately backfilled to prevent precipitation from striking excavation.

### **C. System Removal**

After completing construction operations needing water control, remove materials and equipment used for that purpose, and clean up and restore affected areas as required.

## **3.5 Excavation and Backfill**

### **A. General**

#### **1. Stockpiling**

Stockpiling of excavated materials shall not be allowed at the jobsite.

#### **2. Moisture Control**

Compact backfill material at a moisture content suitable for that material using the compaction equipment employed. Compact cohesive materials at a moisture content within plus or minus four (4) percent of optimum.

When water must be added, distribute it uniformly over the surface of the layer, and thoroughly incorporate it into the soil by manipulation (plowing, discing, raking, or blading) to achieve a uniform distribution of moisture throughout the material. When the moisture content is excessive, defer compaction until the material has dried to a suitable moisture content. Natural drying may be accelerated by manipulation to increase the rate of evaporation, or by blending in a dry material. If drying is accomplished by blending in a dry material, take care not to exceed the specified maximum

## EARTHWORK

layer thickness for compaction. Remove any excess material from the layer before compaction.

### B. *Triangular Area Soils*

1. Excavate the area(s) indicated on the Drawings to a depth of 18 inches (including sod/pavement thickness) or to a greater depth if directed by the Owner. The area being excavated (and not backfilled) shall be restricted to that area which can be backfilled in one day. Remove all materials encountered within the 18-inch depth including stumps and root systems. Carefully load, to avoid fugitive emissions, into lined trucks. Transport excavated materials to the designated area at the Fill Material Placement Cell, spread, compact and provide daily cover.

Excavation shall be suspended during wet weather. In the event of rain, excavated areas shall be covered with 6-mil polyethylene sheets and tarps to prevent intrusion of rainwater. The tarps shall be elevated in the center on drums or appropriate framework such that rainwater is diverted to undisturbed areas.

2. After the cleanup objectives are achieved and the excavation has been taken to the appropriate depth, the Contractor shall backfill to desired grade with preapproved fill in horizontal lifts not exceeding 12 inches loose thickness. Compact to no less than 90 percent of Standard Proctor Density (ASTM D698). Place a minimum of six (6) inches of topsoil over the compacted fill and lightly tamp, taking precautions not to over compact or create a hard crust on top. Finish grade to original elevations, as shown on the Drawings, within a tolerance of 0.1 feet (plus or minus).

### 3.6 **Fill Material Placement Cell**

The Contractor shall transport all materials excavated from the Triangular Area jobsite including, but not limited to: soil, vegetation, debris, asphalt pavement, and gravel pavement using lined haul trucks, to the 102nd Street Landfill Site. These materials shall be placed in the OxyChem Fill Placement Cell (Cell), as directed by the Owner. The Contractor shall place, compact and cover these materials in accordance with the Fill Material Cell Management Plan (Exhibit J).

Vehicles hauling materials to the Cell shall travel on existing haul roads, as directed by the Owner. Vehicle speeds shall be limited to a maximum of 10 miles per hour.

The Contractor shall maintain the existing haul roads in good working condition, and will apply suitable granular material to prevent rutting, as needed.

**End of Specification**



## CHAIN LINK FENCE - GALVANIZED

### 1.0 GENERAL

#### 1.1 Summary

##### A. *Scope of Specification*

This specification prescribes the requirements for the materials and installation (and repair) of chain link fence (galvanized) and the associated posts, rails, braces, terminal posts, other related materials, and fence grounding.

##### B. *Terminology*

1. *Chain Link Fence Classification:* Chain link fencing shall be classified by fabric category as galvanized (zinc coated). Wire to be referred to as galvanized.
2. *NPS:* Nominal pipe size.

##### C. *Existing Perimeter Fence*

1. The Contractor shall remove the existing perimeter fence and accessories and dispose of them off-Site as scrap. Posts shall be cut flush with the ground surface.
2. The Contractor shall install new fence as indicated on the drawings. Any existing sections of fence found to be in poor condition as determined by the Owner shall also be replaced with new fence.

#### 1.2 References

The publications listed below form part of this specification. Each publication shall be the latest revision and addendum in effect at the time of the project's execution unless noted otherwise. Except as modified by the requirements specified herein or the details of the drawings, all Work included in this specification shall conform to the applicable provisions of these publications.

##### A. *ASTM (American Society For Testing and Materials)*

1. ASTM A53 Specification for Pipe - Steel, Black, and Hot Dipped, Zinc-Coated, Welded, and Seamless
2. ASTM A116 Specification for Zinc-Coated (Galvanized) Steel Woven Wire Fence Fabric
3. ASTM A120 Specification for Pipe, Steel, Black, and Hot Dipped

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- Zinc-Coated (Galvanized) Welded and Seamless, for Ordinary Uses
4. ASTM A123 Specification for Zinc (Hot-Dipped Galvanized) Coatings on Iron and Steel Products
  5. ASTM A143 Recommended Practice for Safeguarding Against Embrittlement of Hot Dipped (Galvanized) Structural Steel Products and Procedure for Detecting Embrittleness
  6. ASTM A153 Specification for Zinc Coating (Hot Dip) on Iron and Steel Hardware
  7. ASTM A392 Specification for Zinc-Coated Steel Chain Link Fence Fabric
  8. ASTM A475 Specification for Zinc-Coated Steel Wire Strand
  9. ASTM A525 Specification for General Requirements for Steel Sheet, Zinc-Coated (Galvanized) by the Hot Dip Process
  10. ASTM A570 Specification for Steel, sheet and strip, carbon, Hot-Rolled, Structural Quality
  11. ASTM A641 Specification for Zinc-Coated (Galvanized) Carbon Steel Wire
  12. ASTM A817 Specification for Metallic Coated Steel Wire for Chain Link Fence Fabric
  13. ASTM F567 Practice For Installation of Chain Link Fence
  14. ASTM F626 Specification for Fence Fittings
  15. ASTM F669 Specification for Strength Requirements of Metal Posts and Rails for Industrial Chain Link Fence
  16. ASTM F1083 Specification for Pipe, Steel, Hot-Dipped, Zinc-Coated (Galvanized), Welded for Fence Structures

### 1.3 Storage and Protection

- A. Store materials 12 inches off the ground or slab by using wood blocking or

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other approved materials.

- B. Store materials in areas of the job site designated or approved by Owner.

### 1.4 Scheduling and Sequencing

Certain portions of the work are specified to be completed and operational prior to completion of all Work. Sequence equipment and gate installation, and properly protect equipment to prevent contamination or damage to equipment in adjacent work areas. Phasing and sequencing shall be subject to the approval of Owner.

## 2.0 PRODUCTS

### 2.1 Materials

#### A. General

Fence fabric, posts, top rail, tension wire, corner posts, and appurtenances shall conform to the ASTM codes and standards for the appropriate type of materials as listed under Section 1.2 of this specification, and more specifically listed in the following paragraphs.

- B. Materials shall be uniform, consistent, and meet the following requirements:

1. Fabric shall be 6 feet high, heavy galvanized chain link fence, conforming to ASTM A392, Class 2, of two (2)-inch mesh 9 gage wire (0.148 inches in diameter), with the top and bottom selvages twisted and barbed.
2. *Line Posts*
  - a. For fabric up to eight (8) feet high, line posts shall be two (2) inch NPS schedule 40 galvanized steel pipe with an outside diameter of 2.375 inches in accordance with ASTM A120.
3. *End Corner and Pull Posts*
  - a. End corner and pull posts 8 feet high or less shall be 2- 1/2 inch NPS schedule 40 galvanized steel pipe in accordance with ASTM A120;
4. *Top Rails*

Top rails shall conform to 1- 1/4 inch NPS schedule 40 galvanized steel pipe in accordance with ASTM A120;

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### 5. *Tension Wire*

Tension wire shall be 7 gage US Steel wire galvanized in accordance with ASTM A116 coating class III. The tension wire shall be stretched near the bottom of the fence and attached at two (2) foot intervals.

### 6. *Appurtenances*

Brace bands, tension bands, and tension bars shall be fabricated of 1/8 inch by 7/8 inch galvanized steel with galvanized steel carriage bolts and nuts in accordance with ASTM A123. Tension bars shall be 1/4 by 3/4 inch galvanized steel bar in accordance with ASTM A153.

### 7. *Fabric Ties*

Fabric ties shall be class I galvanized steel wire no less than 9 gage.

### 8. *Post Tops*

One post top shall be provided for each post, with openings to permit through passage of top rail. Materials shall be pressed steel or malleable iron that is designed as watertight closure cap for tubular posts and shall be galvanized per ASTM A153.

## 3.0 EXECUTION

### 3.1 Examination

The physical locations of features such as fence lines, gates, terminal posts shall be in accordance with the plans. Removal of trees, shrubs, or landscape areas will be performed by the Owner.

### 3.2 Preparation

Provide a reasonably smooth profile at the fence line. The bottom of the fence shall not be more than two (2) inches above the finished ground line. Where the fence crosses features such as drainage ditches and it is impractical to conform the fence to the ground contour, the fence shall span the depression, unless otherwise shown on the Drawings. Close the space below the bottom of the fence with extra fence fabric. If extra length fence posts are required at such locations, they shall be furnished and installed in lieu of standard length posts, together with any intermediate posts, stakes, braces, extra fabric, or wire as may be required.

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### 3.3 Installation

#### A. Post Spacing

Install line posts and brace posts at intervals not to exceed 10 feet. Posts shall be evenly spaced. Locate corner and terminal posts on the construction plans. Install corner or slope posts where changes in grade exceed a 30 degree deflection.

#### B. Installation of Line, Corner, Pull, and Terminal Posts

1. Set line, corner, pull, and terminal posts vertically in cylindrical concrete foundation in accordance with the schedule in Table 1 and in accordance with ASTM F567.

**Table 1. Line, Corner, Pull, and Terminal Post Installation Schedule**

	<u>Foundation Diameter</u>	<u>Foundation Depth</u>	<u>Post Embedment</u>
Line Post	0'- 9"	3'- 3"	3'- 0"
Terminal Post	1'- 0"	3'- 3"	3'- 0"
Corner or Pull Post:			
2 1/2 inch diameter	1'- 0"	3'- 3"	3'- 0"
3 1/2 inch diameter	1'- 0"	3'- 3"	3'- 0"

2. The exposed surface of the concrete foundation shall have a smooth one (1) inch crown, sloping away from the post. The post shall be six (6) inches from the bottom of the concrete pour.
3. Holes may be hand augered or drilled. Soil from the excavations shall be placed in the Fill Material Placement Cell, as directed by the Owner. If rock is encountered, inform the Owner before performing further work. Drill holes one (1) inch larger than the diameters as per the schedule (Refer to Table 1).

#### C. Setting Posts

Remove any loose and foreign materials from the sides and bottoms of the

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holes; moisten the soil prior to placing the concrete. Center and align posts in the holes. Place the concrete in a continuous pour in the hole around the posts, and tamp to consolidate. Check post for vertical and horizontal alignment, and secure to allow proper curing of the concrete.

1. Keep concrete surfaces moist for at least seven (7) days after placement, or cure with membrane curing material or other approved method.
2. Posts that are set in sleeved holes shall be grouted in place using a non-shrink portland cement grout approved by the Owner.
3. Prior to placing components such as fabric, rails, and tension wire, ensure that the concrete has reached at least 75 percent of its design strength as prescribed on the plan details, or has cured a minimum of seven (7) days after setting the posts.

### **D. Rails and Bracing**

Install fence with a top rail and bottom tension wire. Top rails shall be continuous through post caps or extension arms bending to the radius for wired runs. Space 9 gage minimum fabric tie wire at two (2) feet on centers.

1. Install tension wires parallel to the line of fabric by weaving no less than 6 gage wire of the appropriate type through the fabric and tying to each post.
2. Install top rail and tension wire prior to installation of the chain link fabric. Provide an expansion/contraction coupling, standard with the manufacturer, every 100 feet on straight runs, installed within two (2) feet of a line post. Use end clamps for attaching the top rail or tension wire, and braces to the brace terminal. Use corner clamps for attaching top rails or tension wire and braces to corner posts.

### **E. Installing Fabric**

1. Install the chain link fence fabric so that the posts are enclosed. Stretch the fabric taut, approximately two (2) inches above the ground, and fasten securely to the posts.
2. Cut the fabric and attach each span independently at all terminal and corner posts. Use stretcher bars with fabric bands spaced at a maximum 15 inch intervals to fasten fabric to terminal posts. Use tie wire, metal bands, or other approved material attached at maximum 15-inch intervals to fasten fabric to line posts. Fasten the top edge of the fabric to the top rail or tension wire with wire ties at intervals not exceeding 15 inches.

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Fasten the bottom edge of fabric to the bottom tension wire with wire ties at intervals not exceeding 15 inches.

### **F. Miscellaneous Installation**

Use U-shaped tie wires, conforming to the diameters of pipe, that clasp the pipe and fabric firmly with ends twisted at least 2 full turns.

1. Bend ends of exposed wires to minimize hazards to persons or clothing.
2. Install nuts for fasteners on tension bands and hardware bolts on the side of the fence opposite the fabric. The ends of bolts, once secure and checked for smooth operation, shall be peened to prevent removal of nuts.
3. Repair coatings damaged in the field with methods and techniques as recommended by the manufacturer.

### **3.4 Grounding**

#### **A. Fence**

Fence shall be grounded every 500 to 750 feet when in close proximity (100 feet or less) to public road, highways, and buildings. Fence shall be grounded at location where the fence alignment changes more than 15 degrees.

#### **B. Fence Posts**

Each fence post to be grounded shall be connected to a ground electrode consisting of a copper-clad steel ground rod 3/4 inch in diameter and 10 feet long, driven not less than 11 feet into the ground with rod located at the fence line or as near the fence line as is practicable. Connection of fence post to ground electrode shall be made below grade with not less than No. 4 AWG stranded-cooper wire with TW insulation by approved molded exothermic weld process or approved clamp-type fitting of cooper on fence post and electrode.

### **3.5 Protection**

A guarantee shall be furnished for all materials, installation, and workmanship to be free of defects for a period of one (1) year from the date of acceptance unless noted otherwise in the contract documents. Any defect in installation or workmanship shall be repaired, and defective materials shall be replaced during the guarantee period without any cost to the owner.

**End of Specification**