INTERIM REMEDIAL MEASURES WORKPLAN

Barthelmes Manufacturing Site
15 Cairn Street
Rochester, New York 14611

NYSDEC Site Code # 828122
WA # D006130-24

PREPARED BY:

HRP ENGINEERING, P.C.
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Submitted: January 17, 2013

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CERTIFICATION

I, Nancy E. Garry, certify that I am currently a NYS Registered Professional Engineer as defined at 6 Part NYCRR Part 375 and that this report, Interim Remedial Measures Workplan, was prepared in accordance with all applicable statutes and regulations and in substantial conformance with the DER Technical Guidance for Site Investigation and Remediation (DER - 10).

Nancy Garry, P.E.
Contract Manager

1.0 Introduction

The goal of this work plan is to conduct an Interim Remedial Measure (IRM) with oversight provided by HRP Engineering P.C. (HRP), in connection with the Barthelmes Manufacturing site at 15 Cairn Street in the City of Rochester, Monroe County, New York (Site No. 828122), referred to herein as the Site (Figure 1). The IRM Work Plan was requested by the NYSDEC pursuant to the October 2, 2012 email from the NYSDEC Project Manager to HRP and as a result of the observations and findings of the Remedial Investigation (RI) conducted onsite from July 2011 through October 2012. IRM activities will include:

- The limited excavation of accessible contaminated soil (and groundwater if necessary) in the former vapor degreaser area;
- The collection and analysis of confirmatory soil samples from the excavation area; and
- The installation of a distribution header well within the excavation to facilitate future in-situ applications.

1.1 Site Background

The Barthelmes Manufacturing Site is located at 15 Cairn Street, City of Rochester, Monroe County, New York (Figure 1). The surrounding properties consist of a mix of industrial and commercial use properties. The Site and surrounding area slope gently toward the north.

The Site is improved by a two-story industrial building, approximately 60,000-ft^2, primarily concrete block and stone building on a 9.2 acre property. Paved parking areas are located to the north and south of the building with two driveway entrances from Cairn Street.

The Site has been occupied by Barthelmes Manufacturing, a metal fabrication facility, since around 1921. Barthelmes Manufacturing processes include stamping, machining, arc and spot welding, powder and spray painting, metal finishing, and assembly. The building has a partial second floor on the east side of the building for offices, and the remainder of the building has an approximately twenty (20) foot high factory ceiling. A former vapor degreaser room is located in the central portion of the building. During the June 2011 visit and subsequent site visits, manufacturing operations were primarily conducted in the southern portion of the building.

The Barthelmes Manufacturing Site has been used for industrial purposes since around 1900. The 1911 Sanborn Map shows the site was used by the American Fruit Products Company (AFPC) and their canning factory and vinegar works. At the time, the site was improved with two buildings, a foundation for a building under construction, and vinegar storage cellars. Barthelmes currently operates out of the southern-most AFPC building and has operated out of this building since around 1921.

Around 1985, a fire engulfed the shipping area and south side of the building. The fire was reportedly started in the former degreaser area and the Rochester Fire Department responded. Water used to put out the fire reportedly entered the trichloroethylene (TCE) vapor degreaser tank and displaced the TCE directly onto the floor and likely into the space beneath the degreaser tank itself. This event is considered to contribute directly to the migration of contaminants to the subsurface.

2.0 IRM Activities

Field activities associated with the Remedial Investigation (RI) delineated an area of contaminated soils (see Figure 2) within the former vapor degreaser area that exceeded the Protection of Groundwater Subpart Part 375 SCO for trichloroethylene and cis-1,2 dichloroethylene.

2.1 Preliminary IRM Activities

Prior to any ground intrusive activities, HRP will update the project-specific Health and Safety Plan (HASP), in accordance with 29 CFR 1910.120. Field activities will be performed by appropriately trained and certified individuals in accordance with HRP's health and safety protocols and applicable federal, state, and local regulations. In addition, HRP will contact the local utilities via the Underground Facilities Protection Organization (UFPO) to perform a utility mark out of the site.

2.2 IRM Field Activities

HRP will oversee and supervise the soil removal activities at the Site. The former degreaser area is located centrally within the building and was established as a "hot" zone based on the RI analytical results. According to field observations and measurements, the most direct access to the degreaser area for excavation equipment is gained through a door on the west side of the building. Additional access can be gained via two overhead doors on the north side of the building. The excavation will be advanced to a depth of approximately 7-8 feet (bgs) or to a depth that the site engineer determines that additional excavation would affect the integrity of the building, no contaminated olfactory observations, and/or laboratory samples are below standards. The objective of the IRM is to excavate soil that exceeds the protection of groundwater standards. Excavation sidewall and excavation bottom samples will be collected to document the quality of soil left in place.

2.2.1 Engineering Supports

In order to facilitate excavation near structural features, a temporary roof shoring system will be constructed consisting of beams and columns supported on donnage. The system has been designed under the direction of Thomas Battles, our Director of Civil Engineering, who is a NYS Professional Engineer. HRP personnel will oversee the installation of this temporary support system under the direct supervision

of Mr. Battles. Additional information regarding the engineering supports is available in Appendix C.

2.2.2 Soil Removal

To expose the excavation area, an approximate five (5) foot by twenty (20) foot area of the concrete floor surrounding both sides of the former vapor degreaser will be enlarged via saw cut or jack hammered to expose the soil and material below the basement floor. In addition, the concrete degreaser pit itself will be removed. The pit is approximately sixteen (16) feet long by six (6) feet wide by four (4) feet deep; therefore the total excavation dimensions will be approximately sixteen (16) feet by twenty 20 feet (see Figure 2). The concrete near the degreaser appears to be approximately four (4) to six (6) inches thick and the presence of rebar is unknown. An estimated fifty to one-hundred (50-100) tons of contaminated soil will be excavated via mini-backhoe to an estimated depth of seven to eight feet below grade. The contaminated soil will be transported via skid-steer and staged on plastic sheeting outside of the building for off-site disposal. The excavated soil will be transported to a NYSDEC approved disposal facility as per DER-10 guidance. A total tonnage of removed contaminated soil including a copy of the disposal manifests or weight slips will be included in the Interim Remedial Action (IRM) Construction Completion Report (CCR) that will be completed by HRP after the excavation activities occur.

HRP will collect grab confirmatory soil samples along the four sidewalls and bottom of the former vapor degreaser excavation area. The sidewall and bottom samples will represent the soil that remains in place after the excavation based on physical observation, olfactory senses, and/or elevated photo ionic detector (PID) reading. Samples will be collected in laboratory supplied bottles and will be preserved on ice in coolers. Each sample will be sent, under a standard chain of custody, to a New York State Department of Health (NYSDOH), Environmental Laboratory Accreditation Program (ELAP) approved laboratory and analyzed for Target Compound List (TCL) for volatile organic compounds (VOCs) by EPA Method 8260 and metals via USEPA Method 6010B. HRP will compare confirmatory soil sampling results to Part 375-6 Unrestricted, Residential, Restricted- Residential, Commercial, and Industrial Recommended Soil Cleanup Objectives (SCOs) for Protection of Human Health and the Protection of Groundwater. In addition, HRP will also collect appropriate waste classification soil samples.

The analytical methods holding times, sampling containers, preservatives, etc. are found in HRP's Generic Quality Assurance Project Plan (QAPP) approved by the NYSDEC as part of HRP's Engineering Services contract. To supplement the generic QAPP for this site-specific IRM plan, the enclosed table (Table 1 in Appendix B) outlines the analytical methods holding times, sampling containers, preservatives, etc. to be used for the IRM.

2.2.3 Groundwater Removal

If groundwater is encountered, the groundwater will be removed from the excavation area and containerized in a frac tank or a vactor truck for off-site disposal. The groundwater will be removed from the excavation via use of a submersible pump or similar type pump, or if a vactor truck is utilized the water will be removed via vacuum. A copy of the groundwater disposal manifests will be included in the IRM CCR.

2.2.4 Horizontal Well Installation

Prior to backfilling, a horizontal well (to be identified as INJ-3) will be installed in the excavation area for use in later in-situ applications to address residual groundwater contamination. INJ-3 will be installed in the former vapor degreaser area excavation with approximately 10 feet of 6 inch (in) diameter polyvinyl chloride (PVC) riser. The well will be constructed with a PVC "T" at approximately 8 ft below-ground-surface (bgs). The PVC T will connect to two 10 ft sections of 6 in horizontal slotted PVC screen which runs the approximate length of the excavation bottom. Pea gravel will be placed around the slotted PVC screen in approximately 2 to 3 ft thickness. Filter fabric will be placed above the pea gravel prior to backfilling the excavation to grade. A 12 in diameter flush mount bolt-down manway will be placed over each well and a 2 ft by 2 foot concrete pad will be constructed around each manway.

2.2.5 Backfill

Backfilling of the dry well excavation area will occur upon completion of excavation and well installation activities. The excavation area will be backfilled with clean fill that meets DER-10 certification requirements. The clean fill will have to be analyzed or approved by the NYSDEC project manager prior to delivery to the site, in accordance with DER-10. A demarcation barrier will be placed in the excavation prior to backfilling activities to delineate soil left in place from the clean fill. The excavation will be finished with concrete similar to the existing slab floor. A copy of backfill delivery slips or receipts will be included in the IRM CCR.

2.2.6 Investigation Derived Waste (IDW)

As stated in previous sections, any investigation derived waste (IDW) shall be handled in accordance with NYSDEC DER-10. Copies of all waste manifests and waste profile sheets will be included in the IRM CCR.

2.2.7 IRM Air Monitoring

In accordance with the DER-10 and NYSDOH's Community Air Monitoring Plan (CAMP) real-time monitoring will be conducted for volatile organic compounds (VOCs) and particulates (i.e., dust) at the perimeters of the designated work area (basement) during IRM activities. All air monitoring readings will be included in the IRM CCR. Due to the fact that the excavation will be conducted inside the building of an active facility, the following additional measures will be conducted to ensure the health and safety of workers and employees in the proximity of the designated work area:

Special Requirements for Work Within 20 Feet of Potentially Exposed Individuals or Structures

When work areas are within 20 feet of potentially exposed populations or occupied structures, the continuous monitoring locations for VOCs and particulates will reflect the nearest potentially exposed individuals and the location of ventilation system intakes for nearby structures. The use of engineering controls such as vapor/dust barriers, temporary negative-pressure enclosures, or special ventilation devices will be considered to prevent exposures related to the work activities and to control dust and odors.

- If total VOC concentrations opposite the walls of occupied structures or next to intake vents exceed 1 ppm, monitoring will be conducted within the occupied structure. Depending upon the nature of contamination, chemical-specific colorimetric tubes of sufficient sensitivity may be necessary for comparing the exposure point concentrations with appropriate pre-determined response levels (response actions should also be pre-determined). Background readings in the occupied spaces will be taken prior to commencement of the planned work. Any unusual background readings will be discussed with the NYSDEC and NYSDOH prior to commencement of the work.

- If total particulate concentrations opposite the walls of occupied structures or next to intake vents exceed 150 mcg/m^3, work activities will be suspended until controls are implemented and are successful in reducing the total particulate concentration to 150 mcg/m^3 or less at the monitoring point.

- Depending upon the nature of contamination and remedial activities, other parameters (e.g., explosivity, oxygen, hydrogen sulfide, carbon monoxide) may also need to be monitored. While explosive atmospheres are not anticipated to be encountered, the selected remediation contractor will be responsible for air monitoring for any workers entering the excavation.

Special Requirements for Indoor Work With Co-Located Residences or Facilities

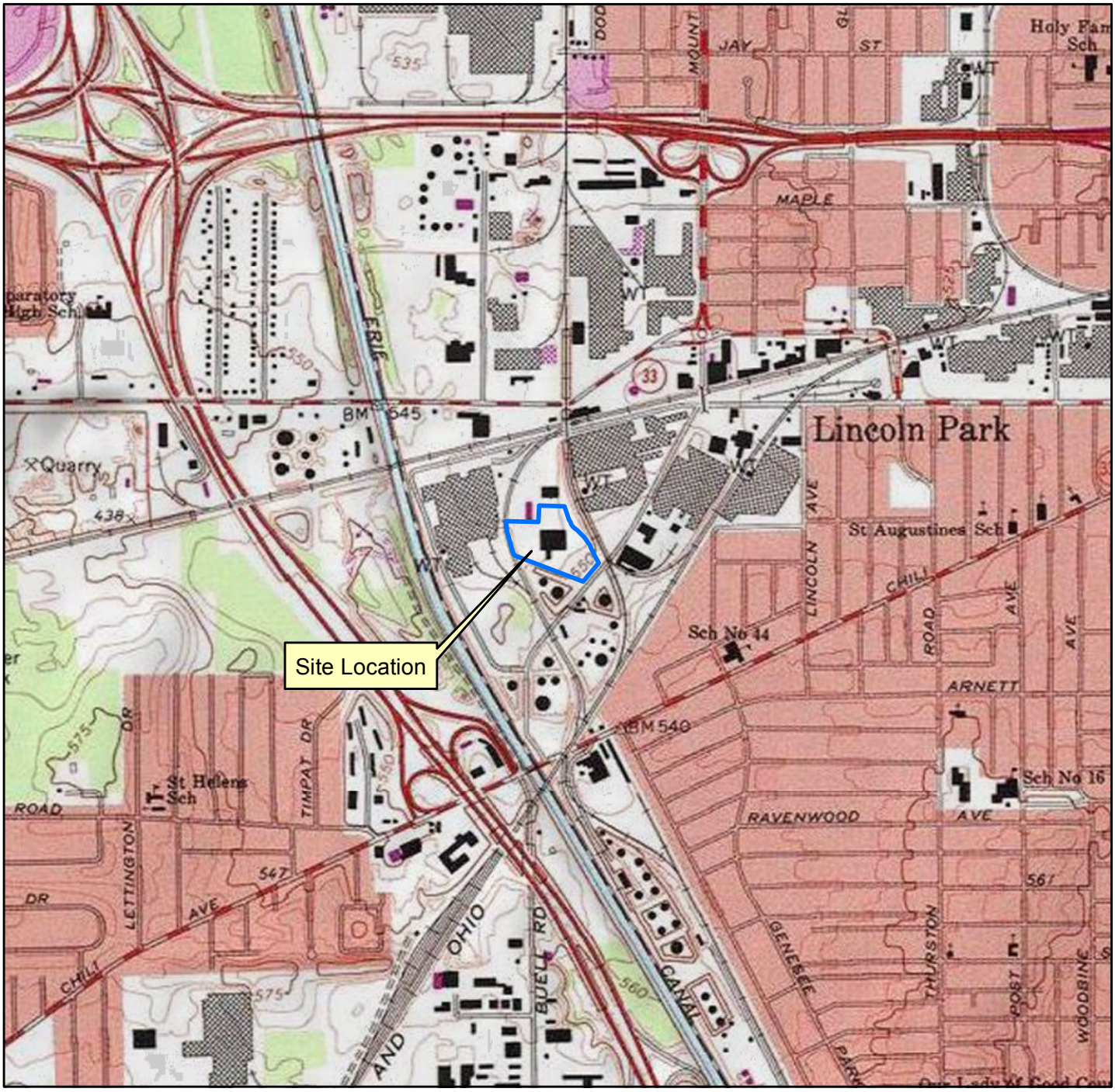
Unless a self-contained, negative-pressure enclosure with proper emission controls will encompass the work area, all individuals not directly involved with the planned work must be absent from the room in which the work will occur. Monitoring requirements shall be as stated above under "Special Requirements for Work Within 20 Feet of Potentially Exposed Individuals or Structures" except that in this instance "nearby/occupied structures" would be adjacent occupied rooms. Additionally, the location of all exhaust vents in the room and their discharge points, as well as potential vapor pathways (openings, conduits, etc.) relative to adjoining rooms, should be understood and the monitoring locations established accordingly. If required, exhaust fans or other engineering controls will be used in an attempt to create negative air pressure within the work area during the remedial activities.

3.0 Report

HRP will oversee the excavation contractor and engineering support installation during the limited excavation of the former degreaser area. The limited excavation and removal will include the removal of grossly contaminated soil and possible groundwater, the collection and analysis of soil samples, backfilling and restoration of the excavation area. A description of the IRM activities will be summarized in an Interim Remedial Action (IRM) Construction Completion Report (CCR). The CCR will be certified and stamped by a NY Licensed Professional Engineer as required by DER-10.

Appendix A

Figures



0 1,000 2,000 4,000 6,000 8,000 Feet

1 inch = 2,000 feet

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Figure 1
Site Location Map
Barthelmes Manufacturing
15 Cairn Street
Rochester, New York
HRP # NEW9624.P2
Scale 1" = 2,000'

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LEGEND

- –HRP SOIL BORING
- –MONITORING WELL
- –BEDROCK MONITORING WELL
- –EXCEEDS 375–6 SCO – PROTECTION OF PUBLIC HEALTH INDUSTRIAL
- –EXCEEDS 375–6 SCO – PROTECTION OF PUBLIC HEALTH – UNRESTRICTED (SOIL IN PPM)
- –PROPOSED EXCAVATION AREA

NOTE:
MW–16, MW–5 AND SURROUNDING SOIL WERE REMOVED DURING JANUARY 2012 IRM EXCAVATION.

HRP-SB-11 2'-4' (9/14/2011)		375-6 SCO PROTECTION OF PUBLIC HEALTH UNRESTRICTED	375-6 SCO PROTECTION OF PUBLIC HEALTH INDUSTRIAL
ARSENIC	14.3	13	16
CADMIUM	8.2	2.5	60
CHROMIUM, TOTAL	248	30	800
COPPER	43,100	50	10,000
LEAD	3,200	63	3,900
NICKEL	472	30	10,000
SILVER	9.9	2	6,800
ZINC	36,800	109	10,000

HRP-SB-11 5'-7' (9/14/2011)		375-6 SCO PROTECTION OF PUBLIC HEALTH UNRESTRICTED	375-6 SCO PROTECTION OF PUBLIC HEALTH INDUSTRIAL
TRICHLOROETHYLENE	8.6 J H	.470	400

HRP-SB-19 12'-13' (6/12/2012)		375-6 SCO PROTECTION OF PUBLIC HEALTH UNRESTRICTED	375-6 SCO PROTECTION OF PUBLIC HEALTH INDUSTRIAL
CIS-1,2-DICHLOROETHYLENE	1.2	.250	1,000
TRICHLOROETHYLENE	.600	.470	400

HRP-SB-9 2'-4' (9/14/2011)		375-6 SCO PROTECTION OF PUBLIC HEALTH UNRESTRICTED	375-6 SCO PROTECTION OF PUBLIC HEALTH INDUSTRIAL
ARSENIC	17.8	13	16

MW-16 2'-3' (10/20/2011)		375-6 SCO PROTECTION OF PUBLIC HEALTH UNRESTRICTED	375-6 SCO PROTECTION OF PUBLIC HEALTH INDUSTRIAL
TRICHLOROETHYLENE	6.6	.470	400
COPPER	54.8	50	10,000
LEAD	254	63	3,900
ZINC	159	109	10,000
MERCURY	0.27	0.18	5.7

HRP-SB-15 2'-4' (9/16/2011)		375-6 SCO PROTECTION OF PUBLIC HEALTH UNRESTRICTED	375-6 SCO PROTECTION OF PUBLIC HEALTH INDUSTRIAL
COPPER	183	50	10,000
ZINC	301	109	10,000

HRP-SB-5 2'-4' (9/13/2011)		375-6 SCO PROTECTION OF PUBLIC HEALTH UNRESTRICTED	375-6 SCO PROTECTION OF PUBLIC HEALTH INDUSTRIAL
MANGANESE	1,720	1,600	10,000

HRP-SB-8 2'-4' (9/14/2011)		375-6 SCO PROTECTION OF PUBLIC HEALTH UNRESTRICTED	375-6 SCO PROTECTION OF PUBLIC HEALTH INDUSTRIAL
ZINC	134	109	10,000

HRP-SB-12 2'-4' (9/14/2011)		375-6 SCO PROTECTION OF PUBLIC HEALTH UNRESTRICTED	375-6 SCO PROTECTION OF PUBLIC HEALTH INDUSTRIAL
ZINC	114	109	10,000

HRP-SB-21 6.5'-7' (6/12/2012)		375-6 SCO PROTECTION OF PUBLIC HEALTH UNRESTRICTED	375-6 SCO PROTECTION OF PUBLIC HEALTH INDUSTRIAL
CIS-1,2-DICHLOROETHYLENE	1.0	.250	1,000

TRENCH DRAIN IN FRONT OF DOOR
COLLECTION PIT–1
HRP–SB–2
DEEP WELL
UNDERGROUND PIPES TO POND
HRP–BR–4
RW–4
MW–18
MW–19
MW–17
RW–5
MW–16
SHALLOW WELL
HRP–SB–3
COLLECTION PIT–3
COLLECTION PIT–2 AND DISCHARGE PIPE TO POND
DRYWELL/FLOOR DRAIN
HRP–SB–5
MW–12
HRP–BR–1
HRP–SB–6
COLLECTION PIT–4
1 STRY. BLOCK BLDG.
HRP–SB–8
MW–10
HRP–SB–14
HRP–SB–20
HRP–SB–13
HRP–SB–12
MW–11
HRP–SB–22
HRP–SB–11
HRP–SB–21
MW–7
HRP–SB–19
HRP–SB–10
HRP–SB–18
MW–1
MW–9
DEGREASE ROOM
MW–6
HRP–SB–9
MW–8
APPROXIMATE LOCATION OF FORMER VAPOR DEGREASER TANK
PROPOSED EXCAVATION AREA (16'± x 20'±)
EXISTING CONCRETE PIT TO BE REMOVED (APPROX. INSIDE DIMENSIONS: 6' x 16' x 4' DEEP)
HRP–SB–7
LOADING DOCK (TYP.)
HRP–SB–1
COLLECTION PIT–6
MW–13
1 STRY. BLOCK BLDG.
TRENCH DRAIN
HRP–SB–16
MW–5
HRP–SB–17
HRP–SB–15
COLLECTION PIT AND TRENCH DRAIN IN FRONT OF DOOR
OUTLINE OF FENCE FOR DRUM STORAGE AREA
HRP–SB–4
MW–15
RW–3
MW–14

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FIGURE 2
SOIL SAMPLE EXCEEDANCES AND EXCAVATION AREA
BARTHELMES MANUFACTURING
15 CAIRN STREET
ROCHESTER, NEW YORK
HRP # NEW9624.P2
NOT TO SCALE

MAP REFERENCE:
MAP DERIVED FROM ON–SITE INSPECTION AND DRAWING ENTITLED "FACILITY DISCHARGES" BY LEADER PROFESSIONAL SERVICES OF PITTSFORD, NY; PROJECT 555.001; DATED 10/06; FILE NAME SITE PLAN; FIGURE 17.

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\\HRPNY01\Shared\Data\NWEWEN - NY STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION\BARTHELMES - 15 CAIRN STREET, ROCHESTER\NEW9624P2\CAD\FIGURE 4A - SOIL SAMPLE EXCEEDANCES & EXCAVATION AREA.dwg, FIGURE 2 - EXCEEDANCES,
11/28/2012 3:58:59 PM, 11 x 17, 1:1

Appendix B

QAPP Table

TABLE 1
SAMPLE CONTAINERS, PRESERVATION, AND HOLDING TIME REQUIREMENTS

Barthelmes Manufacturing Site, 15 Cairn Street, Rochester, NY (D006130-24)

					Containers per Sample			Preservation Requirements			
Parameter	Matrix	Number of Samples (including Field QC)	Preparation Method	Analytical Method*	No.	Size	Type	Temp.	Light Sensitive	Chemical	Maximum Holding Time
SOIL											
VOCs by GC/MS	Soil/Sediment	Refer to IRM Workplan	5035A	SW-846 Method 8260B	1 jar	2 oz. Clear glass jar	Clear glass vials clear glass jar	2-6º C	No	Upreserved	14 days
TAL Metals (except Hg) by ICP	Soil/Sediment	Refer to IRM Workplan	3050B	SW-846 Method 6010B	1	8 oz	clear glass jar	NA	No	NA	6 months

Acronym List:

GC: Gas Chromatography
ICP: Inductively Coupled Plasma HCL: Hydrochloric Acid
MeOH: Methanol
CV: Cold Vapor
VOCs: Volatile Organic Compounds SVOCs: Semi-Volatile Organic Compounds TAL: Target Analyte List
PCBs: Polychlorinated Biphenyls MS: Mass Spectroscopy
ml: Milliliter

C; Celsius
NaOH: Sodium hydroxide
Hg: Mercury

Appendix C

Workplan Specifications

CONSTRUCTION PLAN AND STEEL SPECIFICATIONS
SUBMITTAL NO.: 01-A
PO NO.: RHRP0011

PROJECT
INTERIOR SOIL REMEDIATION
BARTHELMES MANUFACTURING SITE
15 CARIN STREET
ROCHESTER, NY 14611

HRP ASSOCIATES CONTRACT NO.: NEW9624.P2

PREPARED FOR
CAILYN LOCCI
PROJECT MANAGER
HRP ASSOCIATES, INC.
1 FAIRCHILD SQUARE, SUITE 110
CLIFTON PARK, NY 12065

PREPARED BY
CHADD R. GENERAL
PROJECT MANAGER
OP-TECH ENVIRONMENTAL SERVICES, INC.
3255 BRIGHTON HENRIETTA TOWNLINE ROAD, SUITE 102 BACK
ROCHESTER, NY 14623

January 16, 2013

In response to a verbal award of HRP Associates, Inc. (Client) Project No. NEW9624.P2, a site survey of the work area was conducted by OP-TECH Environmental Services on January 4, 2013 at 0930 to document existing conditions and to determine an approach to construction. Photographs were taken for documentation and will be submitted as requested by the Client.

The following will serve to illustrate OP-TECH's intended construction approach including details for the dimensions and positions of the temporary structural support system.

To ensure the integrity of the existing steel columns, pre and post remediation measurements of the position of the two existing load bearing 6-inch diameter steel columns relative to interior concrete masonry unit (CMU) block sidewalls have been and will be taken to record any shifting of their positions. It is noted, that the existing sidewalls are irregular and may be cause for dimensional variation. Pre-remediation measurements were taken during the above mentioned site visit, the measurements are as follows:

Existing 6-inch Diameter Load Bearing Column Survey Data		West CMU Wall, Inches	East CMU Wall, Inches
North Column	Low	180.00	180.25
	Mid	180.13	180.00
	High	180.00	178.50
South Column	Low	179.75	180.63
	Mid	180.00	180.38
	High	179.88	180.25
Notes:			
1. Reference dimensions were obtained using a rotary site laser and a steel tape measure. Interior ambient temperature was approximately 55 degree Fahrenheit.			
2. Low and high reference points were taken 6-inches from the lowest (floor-column interface) and highest (beam-column interface) points on each column.			
3. The existing columns center to center dimension at the midpoint of each column is 276.25-inches (23-ft and 1/4-inch).			
4. Reference points to the eastern and western concrete masonry unit (CMU) walls were taken level from the each column low, mid and high points.			

Prior to OP-TECH mobilization, the following items are requested to be coordinated by the Client (HRP Associates, Inc.):

- Coordinate facility lock-out/tag-out of all equipment, electrical connections, process lines, etc. that could potentially impact the remediation work area.
- Notify Barthelmes Plant workers of work activities and advise not to enter the work area.
- Removal of all Barthelmes Manufacturing existing tools and equipment from the work area to include, but not limited to, steel plating basins, equipment carts, storage containers, and support piping. *See photograph below for reference.*

Process and Storage Equipment to Remove by Others

Location of Temporary Steel H-Columns to maintain 20.5-ft and 26.5-ft beam spans (spacing between the existing live electrical panels and temporary column locations can be increased as needed by reducing temporary beam length, up to 2-ft can be reduced, i.e., install 24.5-ft temporary beams)

Generally, the following construction sequence will be followed:

1. Mobilization

2. Perform Lock-Out-Tag-Out of existing equipment as needed to safely complete the scope of work.

3. Site Preparation:
    a. OP-TECH assumes the NW vibratory polishing machine (*see photo below of the existing work station*) will remain on-line during all work activities. Once the temporary structural steel is erected, a 6-mil plastic sheet barrier will be construction to partially isolate this existing work station to maintain facility access.

    b. As requested by HRP, the existing clay pipe vent (*see photo below*) will be reinforced to allow it to remain in place during construction.

c. Post work area signage.
d. Secure temporary water and electrical supply source.
e. Install temporary 6-mil fire retardant plastic sheeting to redirect equipment emissions and potential volatile soil vapors to the opening in the vaulted ceiling directly above the soil excavation area.
f. OP-TECH will monitor internal air quality with a multi-gas meter and utilize large air-moving fans as needed to redirect and minimize interior work area VOCs.
g. Construct exterior soil staging area per HRP Bid Document Sheet No.2.

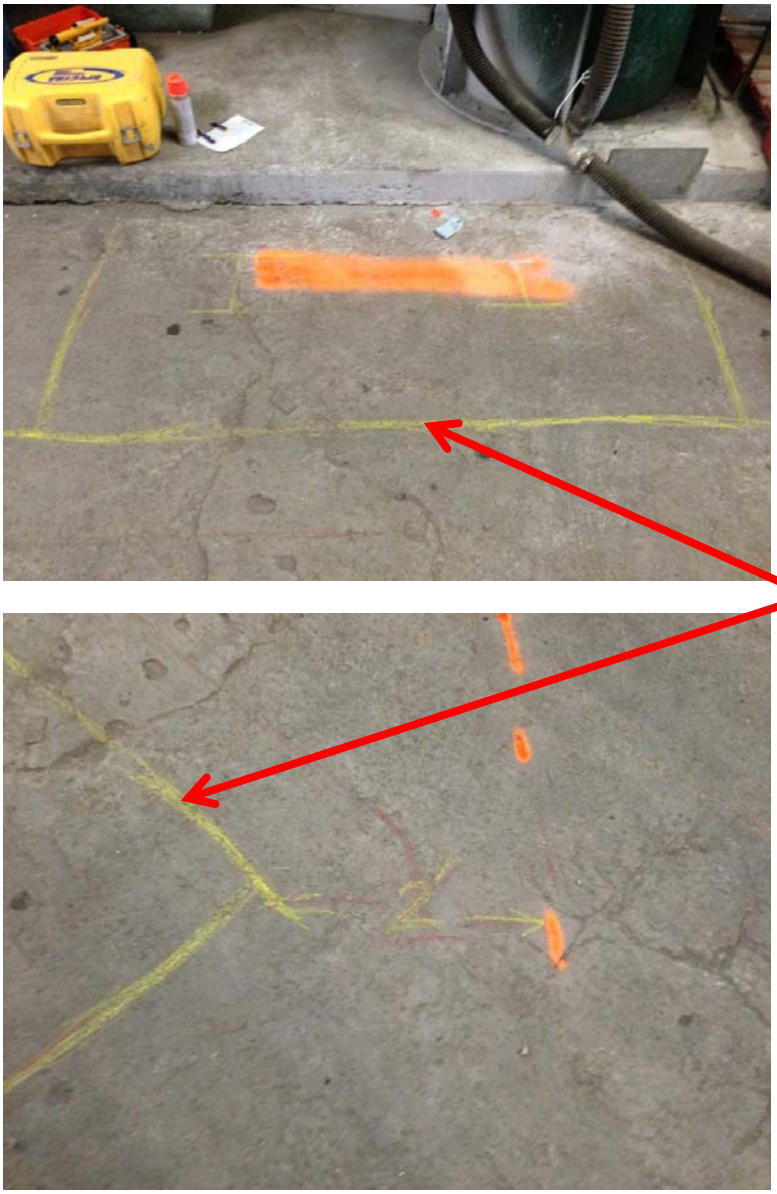
4. Erection of temporary structural steel shoring system.
    a. In terms of concept and layout, the temporary structural steel shoring system will be constructed per the attached Drawings.
    b. Load bearing timber donnage will be utilized at each temporary column pair, in four locations. Three, 1-ft by 1-ft by 6-ft long hardwood timber pieces will be bolted together to form one load bearing timber donnage piece.
    c. All temporary structural steel connections are to be installed via SMWA welding process, better known as “stick welding”.
    d. Electrode size shall be 5/32” and grade 6013.
    e. A continuous weld will be installed at all temporary steel interfaces with a single pass.
    f. A 4-ton capacity propane powered fork lift will be utilized to lift temporary steel members.

* Please refer to the following table for OP-TECH's proposed temporary structural steel member sizes:

AS DESIGNED BY HRP BID DRAWING NO. 1								
TEMPORARY SECTION	DESIGNATION	Depth (d), Inch	Web Thickness (t_w), Inch	Flange Width (b_f), Inch	Flange Thickness (t_f), Inch	QUANTITY	UNIT	LENGTH, FT
H-PILE COLUMN	HP8X36	8.000	0.445	8.155	0.445	8	EACH	TBD
WIDE FLANGE BEAM	WF21X48	20.600	0.350	8.140	0.430	2	EACH	20.5
	WF21X48					2	EACH	26.5
SUPPORTING STEEL MEMBERS						QUANTITY	UNIT	
ANGLE	3" X 3" X 3/8"					300	FT	
PLATE	12" X 12" X 3/4"					4	EACH	

*** PROPOSED OP-TECH DESIGN UTILIZES PREVIOUSLY USED WELDED STRUCTURAL STEEL BEAMS WITH AN ASSUMED YIELD STRENGTH OF 36-KSI**								
TEMPORARY SECTION	* SIMILAR SECTION DESIGNATION	Depth (d), Inch	Web Thickness (t_w), Inch	Flange Width (b_f), Inch	Flange Thickness (t_f), Inch	QUANTITY	UNIT	LENGTH, FT
H-PILE COLUMN	8X36	8.125	0.300	6.125	0.375	8	EACH	12.0
WIDE FLANGE BEAM	24X55	24.000	0.300	12.375	0.750 (bottom), 0.375 (top)	2	EACH	20.5
	24X55					2	EACH	26.5
SUPPORTING STEEL MEMBERS						QUANTITY	UNIT	
ANGLE	6" X 4" X 3/8"					300	FT	
PLATE	16" X 16" X 3/4"					4	EACH	

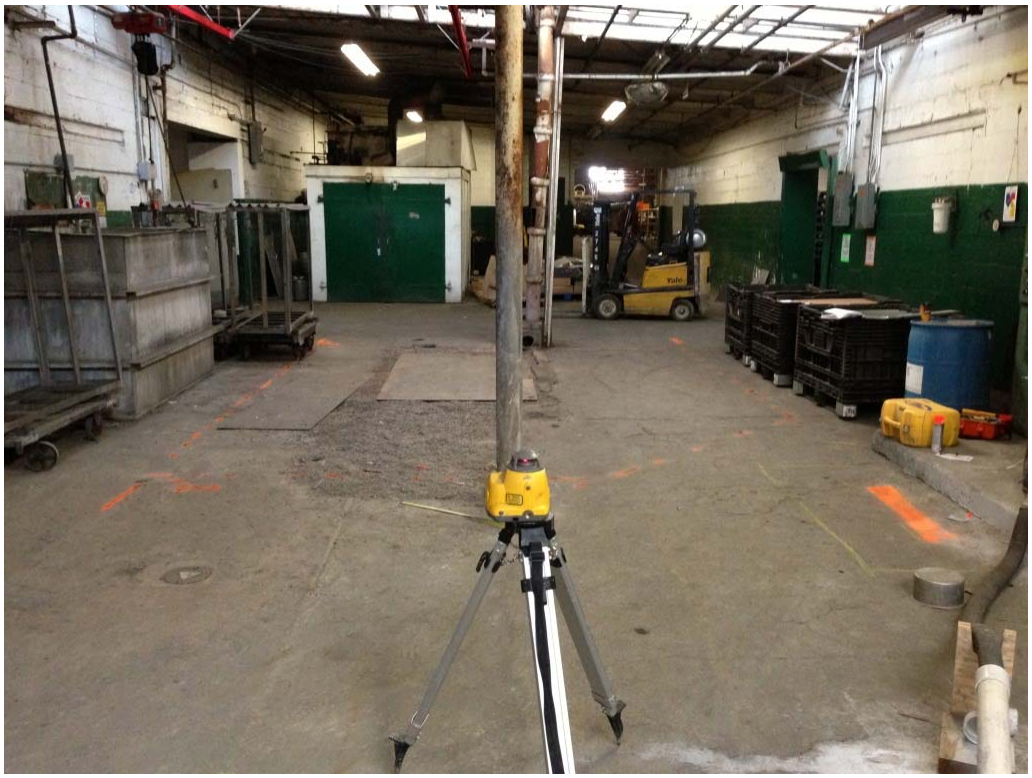
5. Soil Remediation
    a. Excavate and stockpile clean crushed stone material from inside the vapor degreaser pit for onsite reuse as backfill.
    b. Demolish, excavate and stockpile concrete pit walls and base.
    c. Demolish, excavate and stockpile reinforced concrete floor over an irregular and approximate 16-ft by 20-ft excavation area. Note the NW corner of the excavation will be adjusted 2-ft off the timber donnage of the structural steel support system to allow for adequate bearing support of the temporary system; *see photographs below for illustration.*



Footprint of 3-ft by 6-ft by 1-ft timber donnage.

A 2-ft offset from the timber donnage to the excavation sidewall will be maintained at all four donnage locations.

d. Excavate and stockpile impacted soils to the target excavation depth of 8-ft below the top of the concrete floor as directed by the Engineer . *See photographs below for illustration of overall excavation area.*



e. Dewater the excavation, liquid to be stored in onsite containers to allow for client sampling.
f. Potential interior and exterior work area airborne particles will be reduced by spraying mist from an electric powered airless sprayer.
g. OP-TECH assumed HRP will expedite confirmation samples after the excavation activities are complete to allow for backfilling to proceed as quickly as possible.
h. If needed, 100-psi flowable fill will be installed below the existing column footings and allowed to cure until 75% strength is achieved.

6. Backfill excavation base with onsite crushed stone and imported pea gravel.

7. Install 6-inch diameter horizontal well screen in the saturated zone (approximately 6-ft bgs), install solid riser and flush mount well hand-way.

8. Backfill remaining excavation with pea gravel to 1-ft above the top of the horizontal well.

9. Install 15-oz NWGT filter fabric between pea gravel and structural fill.

10. Backfill to subbase elevation at 14-inches below grade with general fill (source to be approved by Client). Material will be compacted to 1-ft below grade via vibratory compacting equipment.

11. Backfill 8-inches of subbase below concrete slab with Type I Crusher Run (3/4-inch stone) to sub-base elevation. The subbase will be compacted using vibratory compacting equipment.

12. Install 6-mil poly vapor barrier between the subbase and concrete slab.

13. Saw cut existing concrete floor to clean up edge.

14. Install concrete floor system as designed by HRP. A curing agent will be applied to the final surface, Cure-N-Seal compound by Euclid or similar.

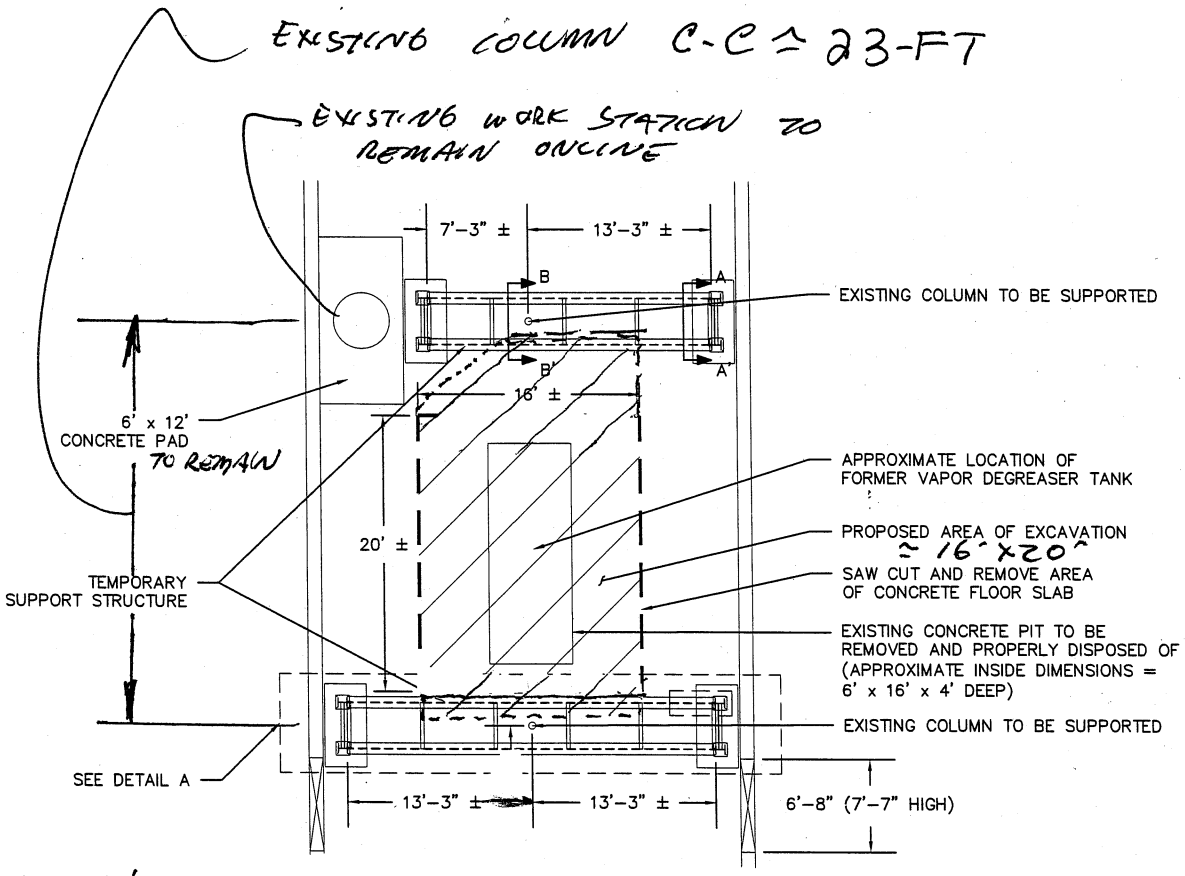
15. Remove temporary structural steel shoring system.

16. Once HRP submits analytical data to OP-TECH, waste profiles will be generated by OP-TECH for the following waste streams:
    a. Non-hazardous discharge of liquids to an onsite sanitary sewer inlet point (OP-TECH to secure permit with Monroe County Pure Waters);
    b. Non-hazardous disposal of soil to an offsite landfill;
    c. Non-hazardous disposal of concrete to an offsite landfill; and,
    d. Non-hazardous disposal of sludge/sediment to an offsite incineration facility.

17. Site cleanup and final demobilization.

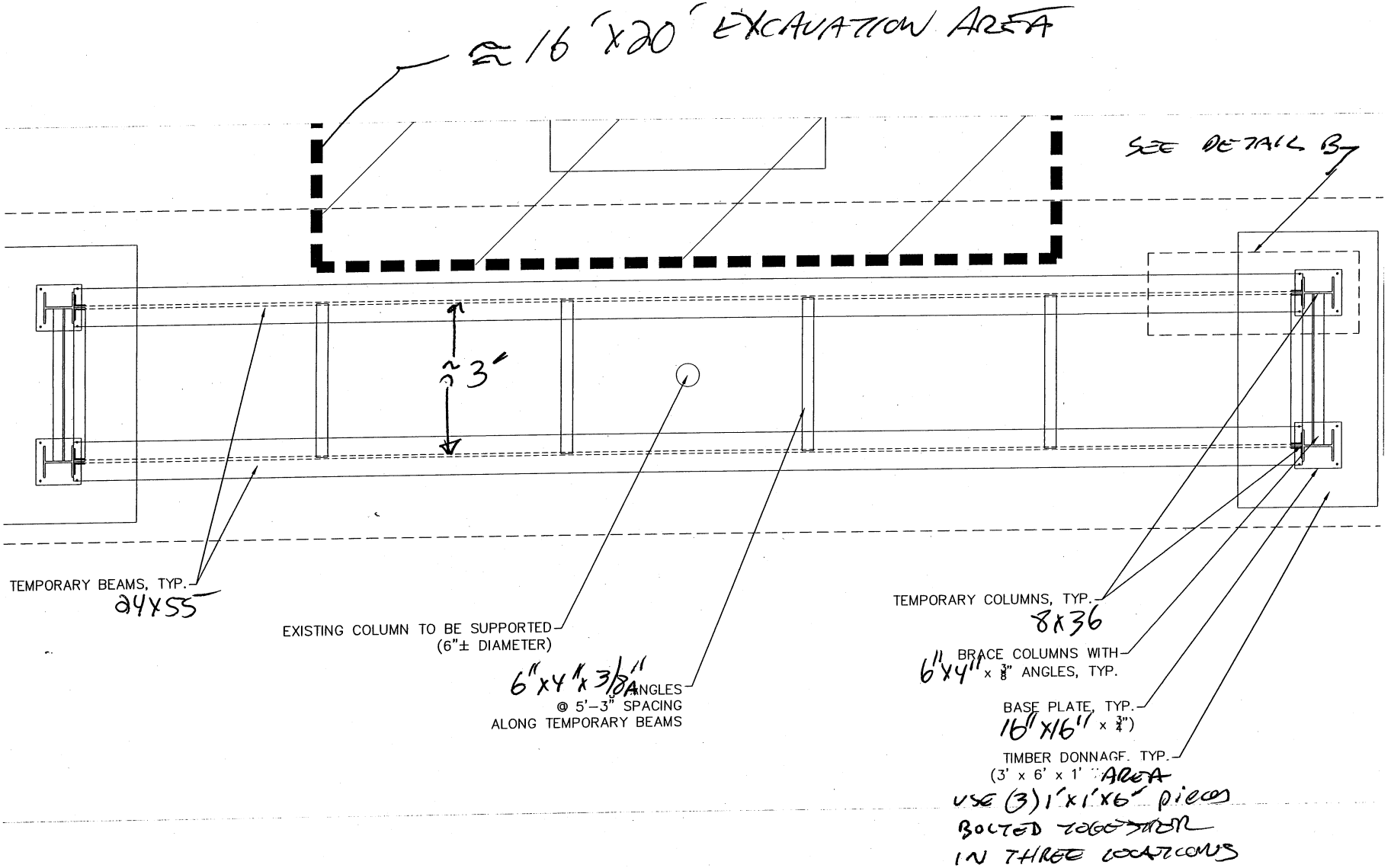
TEMPORARY STRUCTURAL SUPPORT PLAN

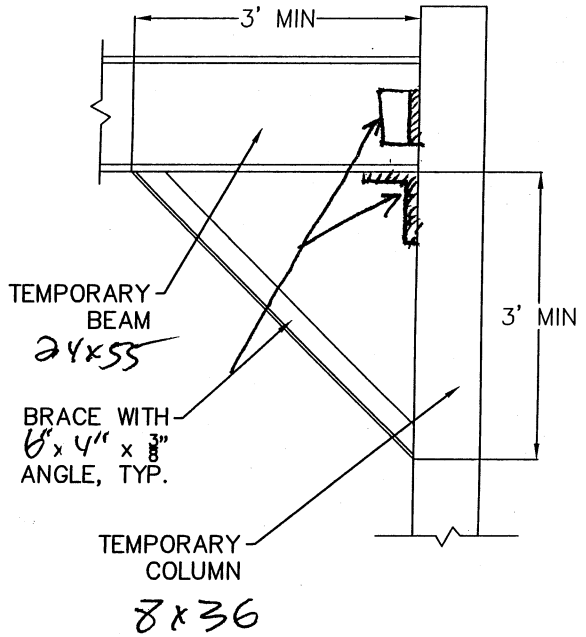
N.T.S.



NOTES:

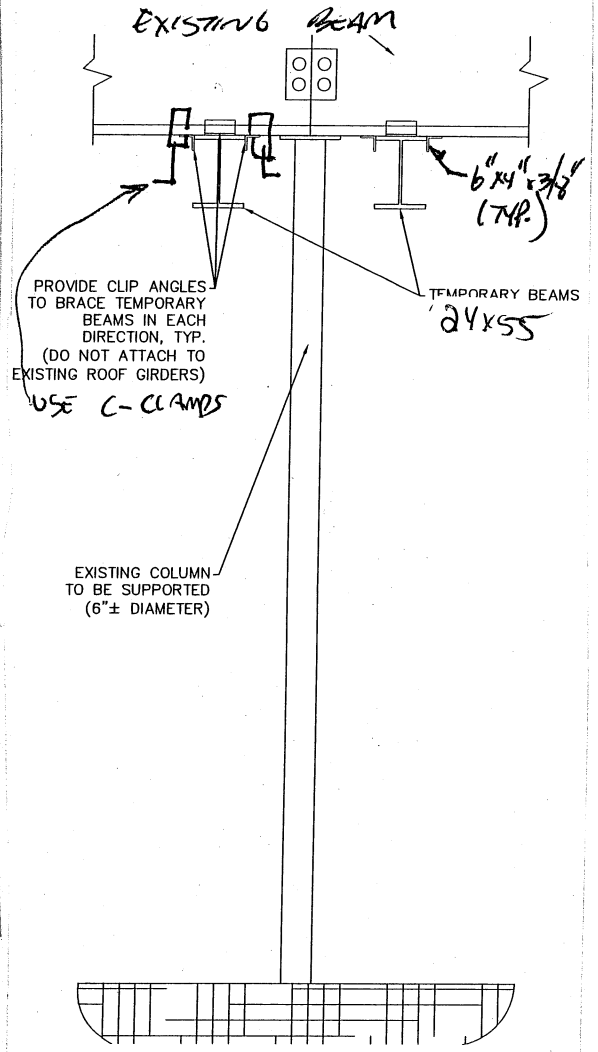
1. ALL TEMPORARY STRUCTURAL STEEL SUPPORTS TO BE INSTALLED VIA SMWA PROCESS, W/ 5/32" 6013 ELECTRODE.
2. ALL MEMBERS WILL BE ERECTED ONSITE, COLUMNS WILL BE PLUMBED BY USE OF TEMPORARY LUMBER, UNTIL BEAMS ARE TACKED IN PLACE.
3. A CONTINUOUS WELD WILL BE PLACED AT ALL MEMBER INTERFACES, ALONG A SINGLE PASS.
4. DURING REMOVAL, ALL TEMPORARY STEEL MEMBERS WILL BE TORCHED IN PLACE.
5. A FOUR TON CAPACITY PROPANE POWERED FORK-LIFT WILL BE UTILIZED DURING TEMPORARY STRUCTURAL STEEL ERECTION & REMOVAL.


≈ 16'x20' EXCAVATION AREA
SEE DETAIL B
≈ 3'
TEMPORARY BEAMS, TYP.
24X55
EXISTING COLUMN TO BE SUPPORTED
(6"± DIAMETER)
6"x4"x 3/8" ANGLES
@ 5'-3" SPACING
ALONG TEMPORARY BEAMS
TEMPORARY COLUMNS, TYP.
8X36
6"x4" x 3/8" ANGLES, TYP.
BRACE COLUMNS WITH
BASE PLATE, TYP.
16"X16" x 3/4")
TIMBER DONNAGE. TYP.
(3' x 6' x 1' AREA
USE (3) 1'x1'x6' pieces
BOLTED TOGETHER
IN THREE LOCATIONS



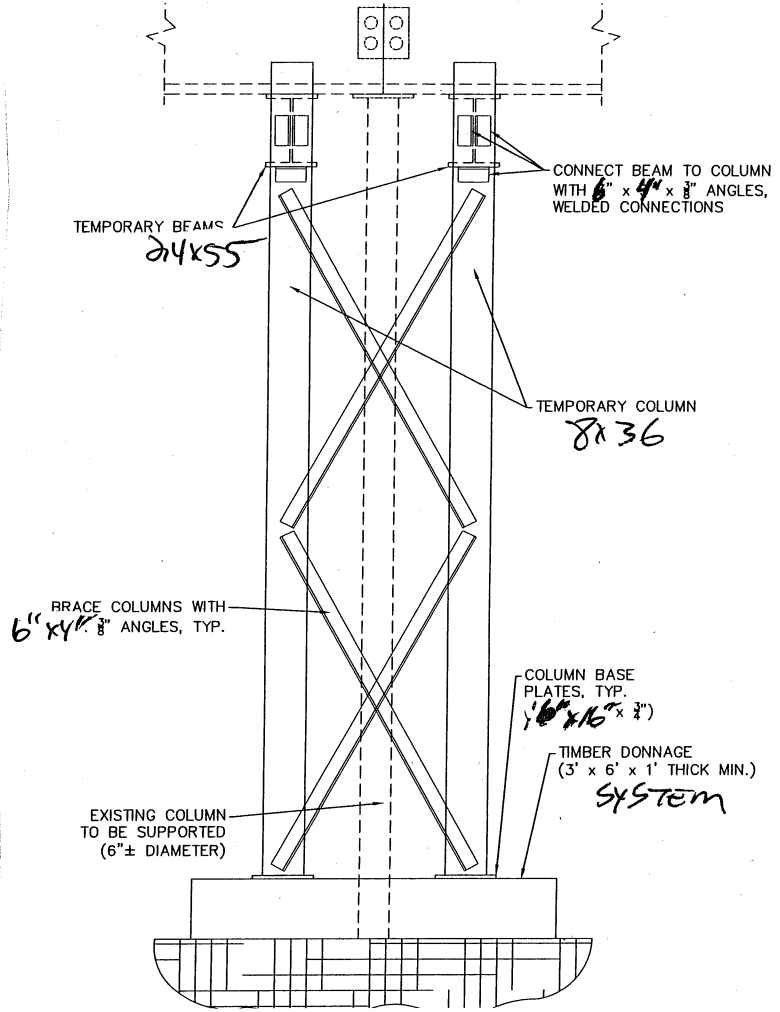
DETAIL B

N.T.S.



DETAIL B-B'

N.T.S.



DETAIL A-A'

N.T.S.