1-30-073

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27 April 2004

Mr. Steven M. Scharf, P. E.
Division of Environmental Remediation
Remedial Action, Bureau A
New York State Department of Environmental Conservation
625 Broadway
Albany, NY 12233-7014

Subject: Installation of the Sub-Slab Venting System
150 Fulton Avenue
Garden City Park Industrial Site No. 130073

Dear Mr. Scharf:

On behalf of Genesco Inc., Environmental Resources Management (ERM) has prepared this summary of the installation of a sub-slab venting system underneath the 150 Fulton Avenue Building. The system was installed in substantial conformance with ERM's work plan dated October 8, 2003. This work plan was subsequently approved in your letter dated November 13, 2003. Construction of the system began on January 12, 2004, and after several weather-related delays, the system installation was completed on February 19, 2004. The background for the design of this system, and a summary of the installation is provided in the sections below.

Background and Basis for Design

Pursuant to ERM's report "Results of Confirmatory Soil Sampling & Shutdown Notification", dated November 6, 2001, the IRM was shutdown in December 2001. The shutdown was the result of the IRM achieving the soil cleanup levels (TAGM No. 4046 Recommended Soil Cleanup Objectives) as set forth in ERM's "Final Engineering Report", dated December 1998. Following shutdown, NYSDEC requested that additional sampling, beyond that which was set forth in the "Final Engineering Report" and ERM's "Confirmatory Soil Sampling Plan", dated July 18, 2001. The additional sampling was intended to assess whether indoor air concentrations of PCE were above a New York State Department of Health (NYSDOH) residential Indoor Air Quality (IAQ) guideline of 100 ug/m^3. Of note, indoor air sampling performed by the NYSDOH prior to the implementation of the IRM, which ultimately removed an estimated 10,000

pounds of PCE, did not identify any indoor air issue that warranted mitigation measures.

In accordance with the NYSDEC request, ERM performed additional sampling in January and April 2002. In January 2002, samples of ambient air, indoor air, and subsurface vapor were collected for laboratory analysis while only indoor air samples were collected in April 2002. With respect to indoor air, both sets of results confirmed that levels were below the stated NYSDOH guideline. The air testing results were submitted to NYSDEC, and provided further technical justification in support of ERM's request for no further action with respect to the IRM. A number of subsequent discussions and letter exchanges on this issue followed, and culminated in the discussion with ERM, Genesco, USEPA, NYSDOH, and NYSDEC in a meeting held on February 6, 2003 in Albany. At that meeting, it was agreed that the installation of a vent, which would allow any residual sub-slab vapors to exit from beneath the building, would serve as an extra protective measure as a conclusion to the IRM.

This proposed approach to the venting system and other information concerning the February 2003 meeting was summarized in letter from ERM to NYSDEC dated 6 March 2003. The NYSDEC responded in a letter dated 21 April 2003, stating with respect to the proposed venting system, "We have consulted with the NYSDOH regarding the installation of a sub-slab depressurization system (SSDS). The approach for the SSDS, as proposed in your March 6 letter, is acceptable and we concur that the 150 Fulton Avenue VOC indoor air monitoring may be suspended once the SSDS is properly installed."

ERM subsequently submitted the venting system work plan on October 8, 2003. This venting system was designed to operate by providing a preferential pathway for soil vapor to travel, under conditions that might otherwise promote the possible migration of soil vapor into the building. The NYSDEC approved the venting system work plan in a letter dated 13 November 2003.

Area of Implementation

Because the original area of impacted soil was located along the northeast corner of the 150 Fulton Avenue building, it is anticipated that the majority of PCE-impacted soil vapor is located under the northeastern part of the building, and, any additional PCE vapor would likely originate from the

vicinity of formerly impacted soil. Therefore, the sub-slab venting system was designed to address the northeastern area of the building.

Site Preparation/Equipment Removal

Before the installation of the venting system, all remaining equipment from the IRM was demolished and removed from the site. Aboveground piping was cut below grade and removed, and the surface was restored. Below-grade piping remains in place. All equipment pads were removed down to grade level. Fencing and the electrical power drop were also removed.

Wells that were retained include: all flush-mount wells (VOW-1S, VOW-1I, VOW-1D, VOW-3S, VOW-3I, VOW-3D, and VOW-5), as well as stick-up wells VOW-4D and VEW-1. VOW-4D and VEW-1 were converted to flush-mount wells. Wells that were abandoned include all sparge wells (ASWs 1-8), VEW-2, VOW-4I, VOW-4S, VOW-2D, VOW-2I, and VOW-2S. These wells were abandoned as follows:

1. The portion of the well occupied by the screen was filled with clean sand, up to, and not surpassing, the top of the screen.

2. The entire casing, including riser pipe and annular spaces, was filled with a cement/bentonite grout.

3. After the casing was grouted, the curb box was filled with concrete.

Figure 1 presents a restored site plan that shows all remaining wells, piping, and equipment.

Design and Installation

Figure 2 presents a schematic of the sub-slab venting system showing the location of all screens, piping, and the emission stack. Figure 3 presents detail drawings of the system.

The sub-slab venting system consists of 2-inch diameter stainless steel wire-wrapped well screens (0.02-inch slot size) spaced 5 to 10 feet apart and driven underneath the north and the east walls of the northeast corner of the building. As indicated in the design, three sub-slab vents were installed along the east side of the building, spaced 10-feet apart. After the sub-slab vents and underground piping along the east side were installed, that side

was backfilled to make parking space available for use by building workers. Work then commenced on the north side of the building. Due to field conditions, the arrangement of screens on the north side differs from what was presented in the original design drawings. Originally, the plan was for six 10-foot long well screens to be driven under the north side of the building at 10-foot spacing. Because the screens could not be driven beyond a point approximately 7 feet under the building, the screen installation was revised. A total of eleven sub-slab vents were installed on the north side, spaced approximately 5 feet apart. The screens were installed to a distance of 7 feet under the building. Therefore, the screened zone is between 2 and 7 feet under the building.

To gain access for installation of the screens, a trench was installed along the north and east sides of the building. The trench was about 3 feet in depth and approximately 5 feet wide. A series of 3-inch diameter holes was drilled through the building footing. The 3-inch holes were located 18 inches below grade. After the hole was drilled, an auger was used to loosen and/or remove soil from underneath the building. The 2-inch stainless steel well screen was then fixed with a drive point and driven through the footing penetrations into the soil under the building. As indicated above, the screens on the east side of the building were driven 10 feet under the building. On the north side, the 5-foot long screens were driven 7 feet under the building. The annulus between the vent pipe and the wall penetration was filled with cement.

All the screens were connected to a 6-inch PVC main vent line that was placed in the trench at a depth of 18 inches below grade. The trench was backfilled with existing soils that were removed during the trench excavation.

Atmospheric Vent

The 6-inch diameter main vent line runs along the north and east side of the building, below ground. At the northeast corner of the building the underground main line transitions to three-inch aboveground steel piping. The 3-inch steel piping is connected to the existing 35-foot stack that was previously used in the soil IRM. The piping is connected to the stack using a bolted pipe coupling.

To enhance the likelihood of soil vapor being extracted by the venting system, a wind-driven turbine ventilator was installed on top of the stack. This ventilator does not require power. When wind blows across the

ventilator, the turbine spins, and creates a vacuum that pulls air from within the venting system. The ventilator is a 6-inch wind-driven rotary-turbine ventilator, McMaster-Carr model # 1994K13. A specification sheet is attached.

Site Restoration

Because of frozen ground and the lack of available asphalt, final restoration of the site has been delayed. On April 5, 2004, four safety bollards were installed around the emission stack. At this time, the disturbed asphalt still needs to be patched and made suitable for parking.

Health and Safety Monitoring

Vapor monitoring program was performed in accordance with the site Health and Safety Plan. During all soil disturbance activities, respirable dust levels were monitored downwind of the work zone to ensure that downwind dust levels did not exceed 0.15 mg/m^3. The dust level in the work zone was also be monitored to ensure that it did not exceed the OSHA Permissible Exposure Limit of 5 mg/m^3. All dust level readings were consistently 0.0 mg/m^3.

At any point where the building footer was penetrated, VOC levels were monitored with a photoionization detector (PID) to ensure they remained below 5 ppmv in the work zone. During the system installation, all VOC readings were 0.0 ppmv. In addition, the probe of the PID was placed into the drilled holes under the building prior to the installation of the well screens. All PID readings from underneath the building were 0.0 ppmv.

System Performance

The NYSDOH conducted indoor air sampling in December 2003 prior to the construction of the venting system. ERM received a copy of these results from the property owner on January 14, 2004. The NYSDOH indoor air sampling results were consistent with the prior two indoor air sampling events in January and April 2002; (i.e., the indoor air levels of PCE were below the NYSDOH's previously mentioned IAQ guideline). Nevertheless, NYSDEC and NYSDOH further requested ERM to confirm the performance of the system through some type of sampling. Therefore, shortly after installation, a series of flow and vacuum measurements were collected from the discharge of the venting system. The measurements were taken from a port drilled directly into the wall of the three-inch header pipe prior to

connection to the stack (see Figure 3). The results of these measurements, and the corresponding weather conditions are presented in Table 1. Depending on the wind speed, the flow of air was measured between 4.6 and 27.7 standard cubic feet per minute (scfm), at corresponding vacuums of 0.02 and 0.06 inches water column (in. w.c.). Hence, the flow measurements confirm that the vent system has met its operational objective by providing a preferential pathway for soil vapor.

If you have any questions about the installation of the sub-slab venting system, please do not hesitate to contact us at 631-756-8900.

Very truly yours,

John Mohlin, P.E.
Project Manager – IRM

James Perazzo
Principal

Attachments

cc: Jacqueline Nealon, NYSDOH
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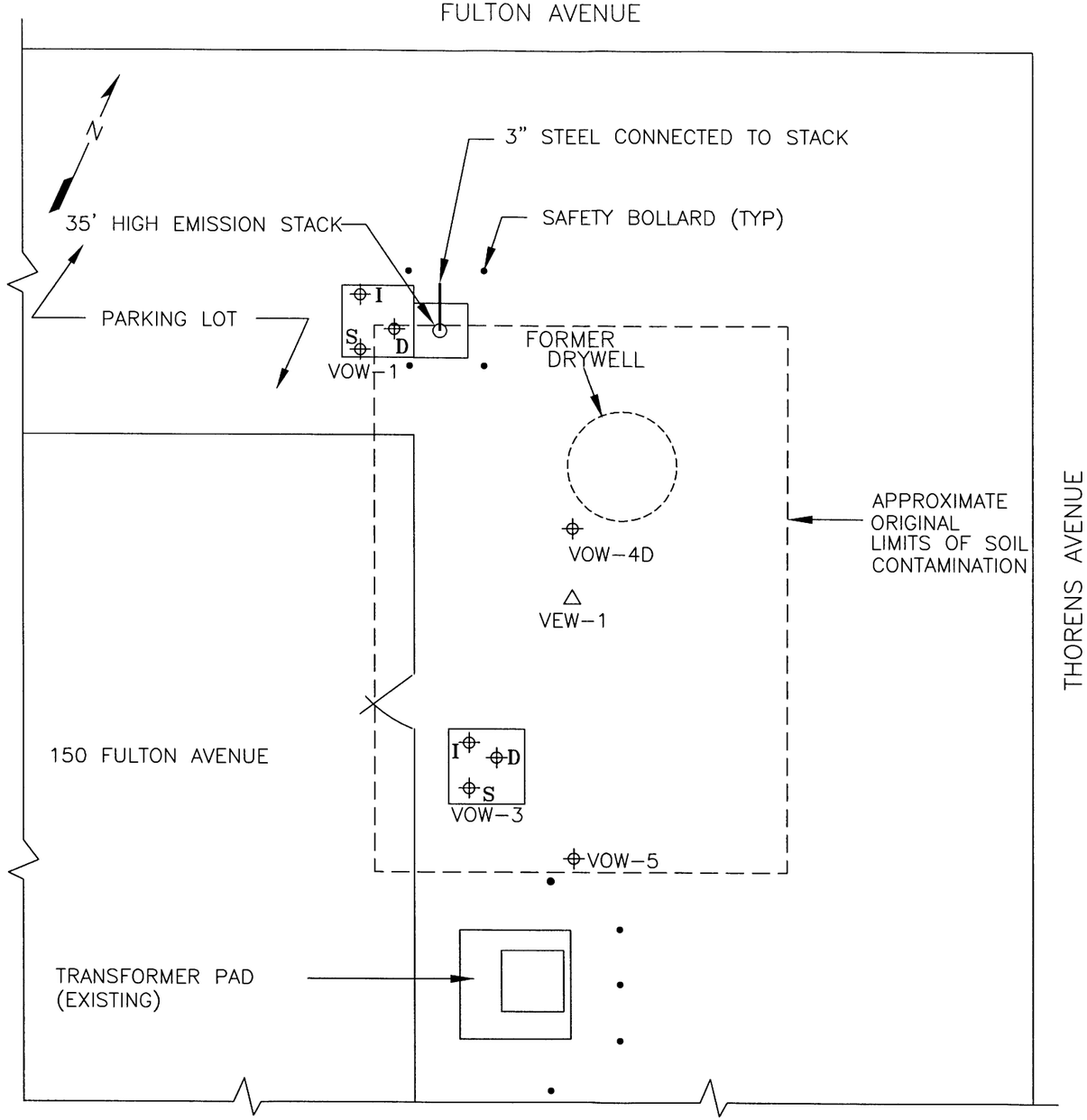
Alali Tamuno, NYSDEC
Joseph Yavonditte, NYSDEC
Kevin Willis, USEPA
Robert Weitzman, NCDOH
April Ingram, Esq., Boult, Cummings, Conners & Berry PLC
Paul Alexis, Esq., Boult, Cummings, Conners & Berry PLC
Roger Sisson, Esq., Genesco Inc.

Table 1
Field Testing of the Passive Vent System
150 Fulton Avenue Site
Garden City Park, New York

Date	Time	Vacuum (in. w.c.)	Velocity (ft/min)	Flow (scfm)	Estimated wind speed (mph)	Weather	Barometric pressure (in. Hg)	Comments
2/23/04	4:50 PM	0.02	98-140	5.0-7.2	5	Sunny, 45°F	Rising	Ventilator spinning slowly, maybe 1 rev/sec
2/23/04	4:55 PM	0.02	186	9.5	5	Sunny, 45°F	Rising	
2/23/04	5:00 PM	0.02	250	12.8	10	Sunny, 45°F	Rising	Ventilator spining very fast
2/24/04	12:15 PM	0.02	89	4.6	Calm	Light snow, 33°F	30.03 Falling	Ventilator barely spinning
2/24/04	12:20 PM	0.02	190	9.7	10	Light snow, 33°F	30.03 Falling	Ventilator spining very fast
2/25/04	2:25 PM	0.06	540	27.7	25	Sunny, 37°F	30.07 Falling	Ventilator spining very fast
2/25/04	2:50 PM	0.05	450	23.1	20	Sunny, 37°F	30.07 Falling	Ventilator spining very fast
3/1/04	12:00 PM	0.03	220	11.3	5	Sunny, 64°F	30.28 Falling	

Notes:
1) All readings collected from a sample port tapped directly into a vertical run of 3" steel pipe.



LEGEND:

⊕ VAPOR OBSERVATION WELL.

0 10'

GRAPHIC SCALE

TITLE

RESTORED SITE PLAN & RETAINED WELL LOCATIONS 150 FULTON AVENUE

PREPARED FOR

GENESCO INC.

Environmental Resources Management

ERM

DRAWN:	JOB NO.:	FILE NAME:	SCALE	FIGURE
J.P.M/EMF	0016440-01	0016440-01-001	GRAPHIC	1
			DATE 3/29/04	

LEGEND

PROPERTY BOUNDARY

VAPOR SAMPLE LOCATION

35 FT STACK (EXISTING)

2" STEEL PIPING (TYP.)

6" PVC SCH 40

2.0'(TYP.)

5.0'(TYP.)

5.0' 4.8' 5.0' 5.2' 4.8' 5.3' 4.7' 5.3' 4.4' 4.6' 8.8'

BREAK ROOM

2" STAINLESS STEEL WELL SCREEN, MAX. 5' SCREEN LENGTHS, 0.020" SLOT (TYP.)

OFFICE

OFFICE
NE CORNER OFFICE

6" PVC SCH 40

RESTROOM

10'

OFFICES

STORAGE

RESTROOM

10'

10.0'(TYP.)

SLOP SINK

SUB SLAB

FORMER DRY WELL

STORAGE

TRANSFORMER

BAY DOOR

SAFETY BOLLARD
(TYP.)

0 10'

APPROX. GRAPHIC SCALE

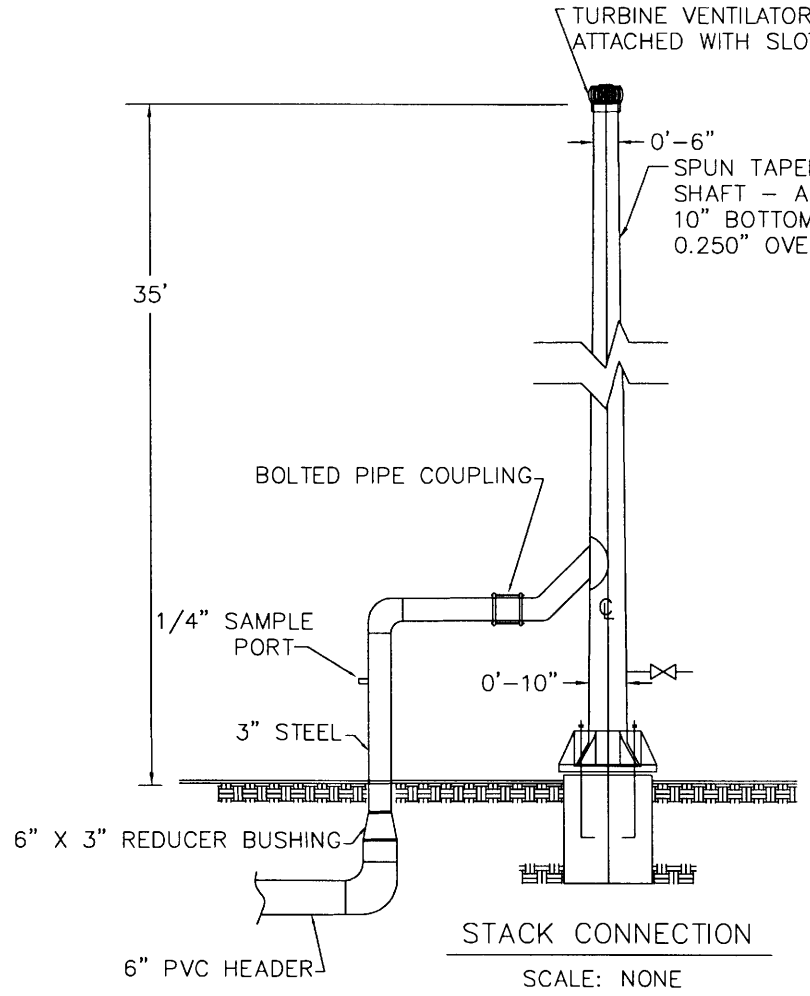
TITLE

PIPING ARRANGEMENT FOR PASSIVE SUB-SLAB VENTING SYSTEM

PREPARED FOR

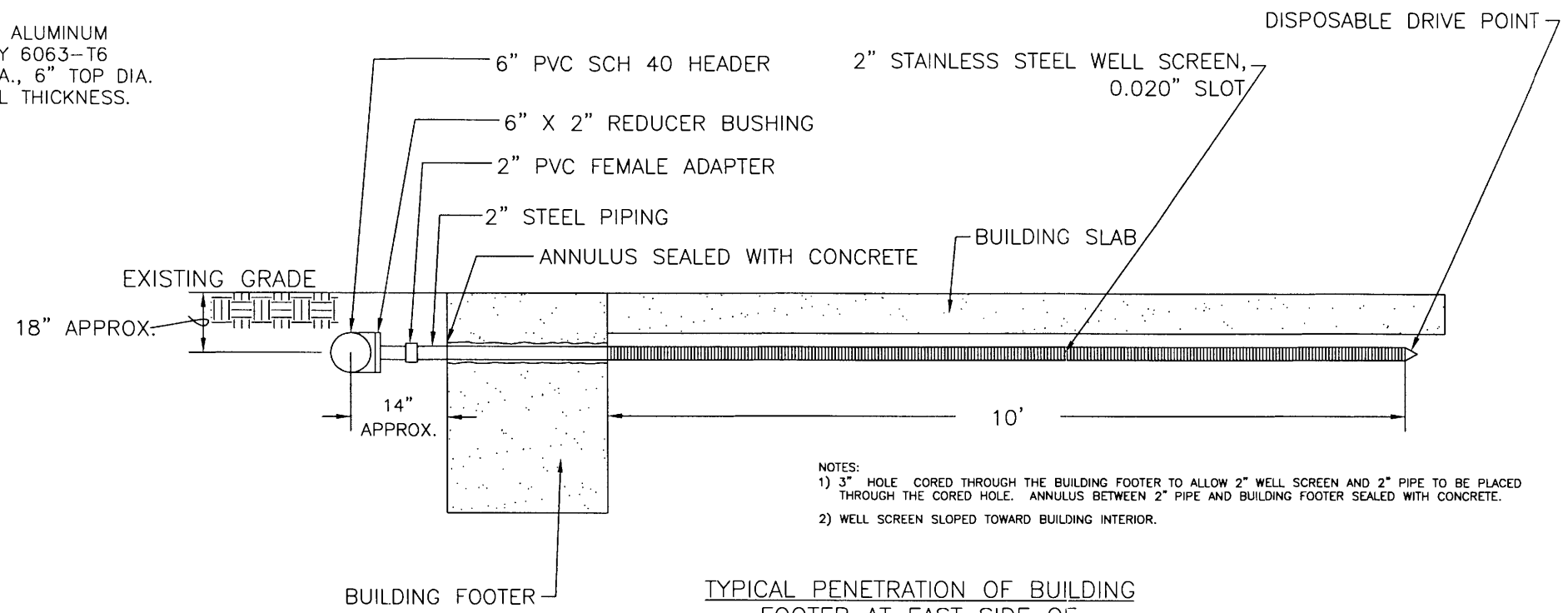
GENESCO INC.

ERM Environmental Resources Management			SCALE 1"=10'	FIGURE 2
DRAWN: JPM/EMF	JOB NO.: 0016440-01	FILE NAME: 0016440-01-002	DATE 3/29/04	



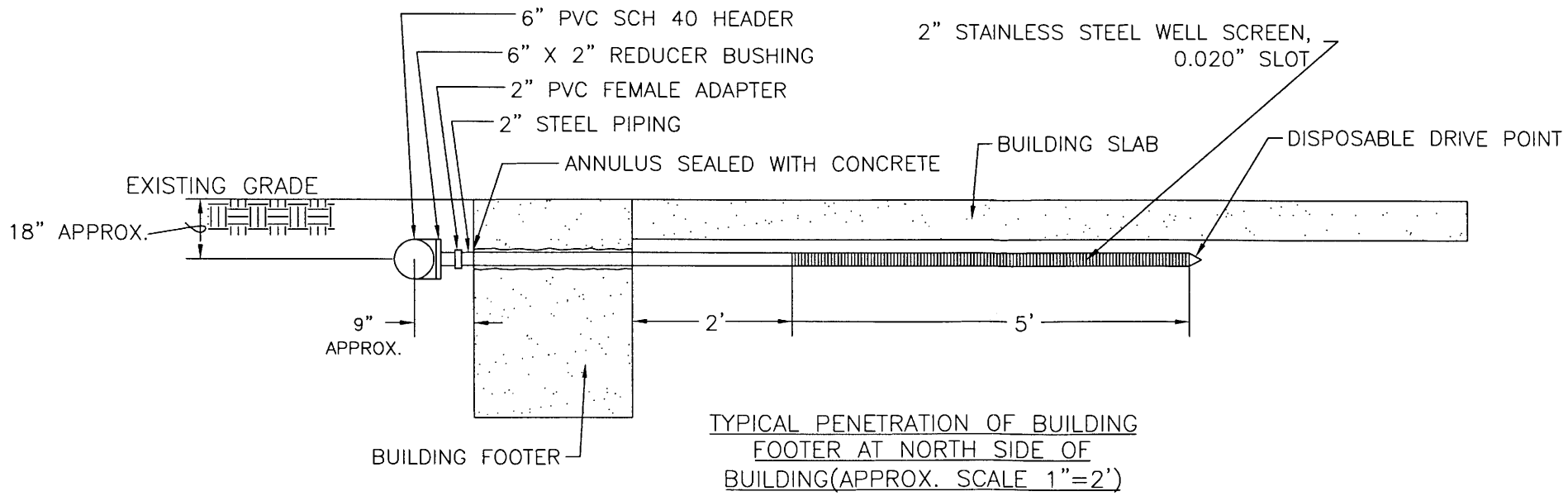
STACK CONNECTION

SCALE: NONE



NOTES:
1) 3" HOLE CORED THROUGH THE BUILDING FOOTER TO ALLOW 2" WELL SCREEN AND 2" PIPE TO BE PLACED THROUGH THE CORED HOLE. ANNULUS BETWEEN 2" PIPE AND BUILDING FOOTER SEALED WITH CONCRETE.
2) WELL SCREEN SLOPED TOWARD BUILDING INTERIOR.

TYPICAL PENETRATION OF BUILDING FOOTER AT EAST SIDE OF BUILDING(APPROX. SCALE 1"=2')



TYPICAL PENETRATION OF BUILDING FOOTER AT NORTH SIDE OF BUILDING(APPROX. SCALE 1"=2')

TITLE

DETAILS FOR PASSIVE SUB-SLAB VENTING SYSTEM

PREPARED FOR

GENESCO INC.

ERM Environmental Resources Management

SCALE	FIGURE
SEE DETAIL	3

DRAWN:	JOB NO.:	FILE NAME:	DATE
JPM/EMF	0016440-01	0016440-01-003	3/29/04

1994K

TURBINE VENTILATORS

AS IT ROTATES, IT VENTILATES

SIZE (inches)	GALV. (gauge)	COPPER (ounces)	APPROX. WEIGHT, PACKED (pounds)	EXHAUST CAPACITY 4-MI. WIND (CFM)
4	26-28	16	5	126
5	26-28	16	7	136
6	26-28	16	7	147
7	26-28	16	8	210
8	26-28	16	8	255
9	26-28	16	11	357
10	26-28	16	11	425
12	24-28	16	13	631
14	24-26	16	21	700
15	24-26	16	31	850
16	24-26	16	31	950
18	24-26	16-20	38	1200
20	24-26	16-20	39	1700
24	22-26	16-20	59	2350

OUTSIDE BRACED

The I Turbine Ventilator is a dependable rotary that works automatically, continuously and silently without operating or maintenance costs. It is outside braced for strength, safety and perfect alignment. Ventilators up to and including 14" are aluminum braced. Larger sizes are steel braced for additional strength.

Operation is simple and sure. When the slightest breeze touches the scientific blade construction, it causes the turbine to rotate. The centrifugal force caused by the revolving turbine creates a partial vacuum within the turbine. This vacuum is then replaced by a strong upward draft of air. A powerful exhaust is thus achieved.

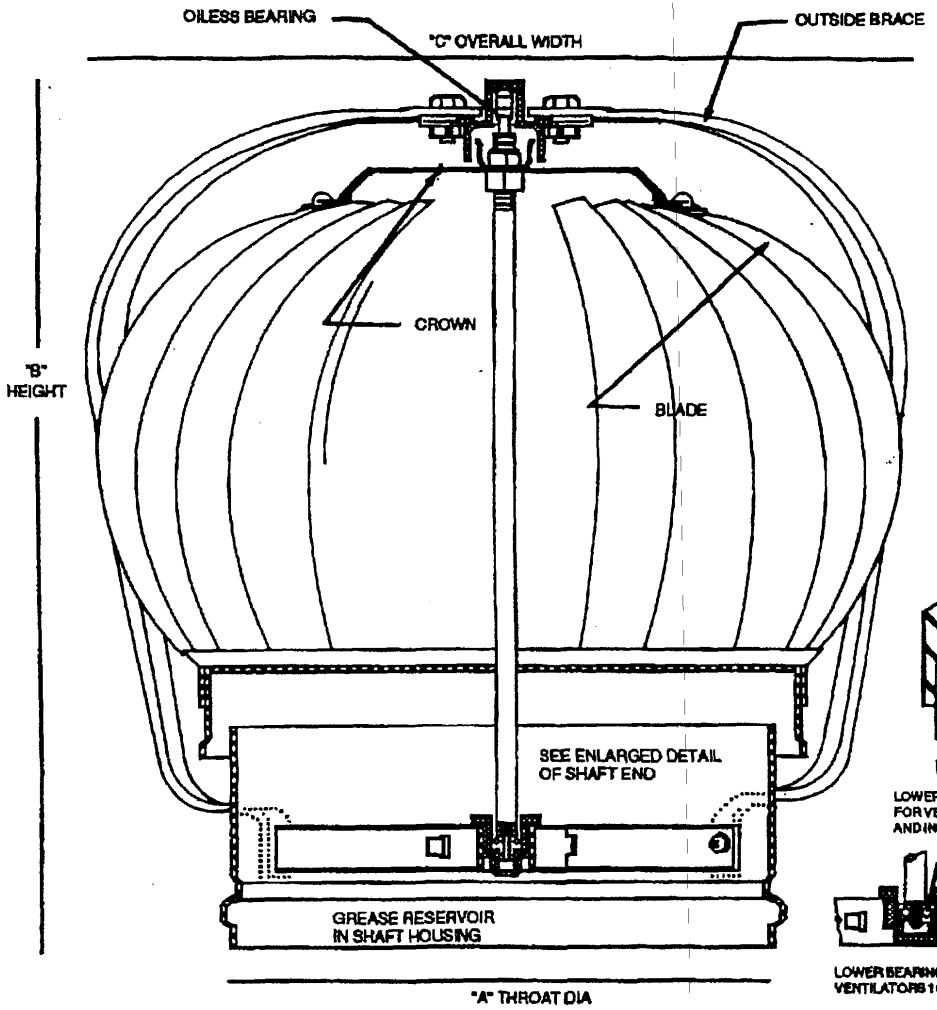
PRECISION BUILT WITH LIFETIME BALL BEARINGS

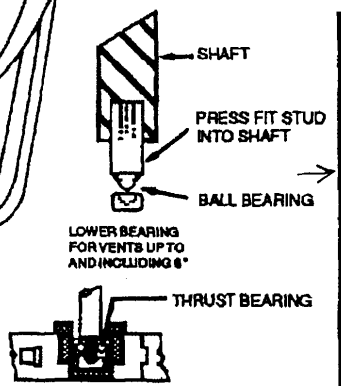
The lower thrust bearing is a hardened steel ball riding in a hardened steel concave seat (in sizes up to 8") for extreme sensitivity and wearability. In larger sizes, thrust type ball bearings are used. Upper bearings on all ventilators are bronze oilless.

The rigid construction of these stormproof ventilators assures years of efficient service. No adjusting or servicing is required. Galvanized ventilators are painted inside and outside with best quality outdoor aluminum paint.

Turbine Ventilators are sold through leading distributors everywhere. Available in galvanized steel, aluminum, copper or stainless steel.

Turbine Ventilators





Construction Specifications

"A" Throat Size	GAUGE			No. of Braces	Brace Material
	Crown Galv.	Blade Galv.	Throat Galv.		
4	24	26	26	3	Alum.
6	24	26	26	3	Alum.
8	24	26	26	3	Alum.
10	24	26	26	3	Alum.
12	24	26	24	3	Alum.
14	22	26	24	3	Alum.
16	22	26	24	3	Steel
18	22	26	24	4	Steel
20	20	26	24	4	Steel
24	20	26	22	4	Steel

Dimensional and Performance Data

"A" Throat Size	"B" Height	"C" Overall Width	Exhaust Capacity *	Approx. Shipping Weight
4	12	10 1/4	128	5
6	14 1/2	12 3/4	147	7
9	15	14 1/4	255	8
10	16 1/4	16 1/4	425	11
12	17	19	631	13
14	19 3/4	22 3/4	700	21
16	21 3/4	25 1/2	950	31
18	24	29	1200	38
20	25 1/4	31 5/8	1700	46
24	28 1/4	35 3/4	2350	59

* 4 MPH Wind CFM