ASD SYSTEM DESIGN WORK PLAN

Former Trico Plant
791 Washington Street
Buffalo, NY

November 2017 0092-016-001

Prepared for:

847 Main Street, LLC,

and

791 Washington Street, LLC

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ASD SYSTEM DESIGN WORK PLAN
FORMER TRICO PLANT
791 WASHINGTON STREET
BUFFALO, NEW YORK

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SUB-SLAB COMMUNICATION TESTING RESULTS AND
ASD SYSTEM DESIGN WORK PLAN
FORMER TRICO PLANT
791 WASHINGTON STREET
BUFFALO, NEW YORK

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1.0 INTRODUCTION

Benchmark Environmental Engineering and Science, PLLC (Benchmark), in association with TurnKey Environmental Restoration, LLC (TurnKey), referred to herein as Benchmark-TurnKey, has prepared this Active Sub-Slab Depressurization (ASD) Design Work Plan behalf of 847 Main Street, LLC, 791 Washington Street, LLC, and their construction manager, The Krog Group, LLC, collectively referred to herein as Krog. Krog has elected to pursue cleanup and redevelopment of the Former Trico Plant, located at 791 Washington Street, Buffalo, New York (Site; see Figures 1 and 2), under the New York State Brownfield Cleanup Program (BCP or Program) through an executed Brownfield Cleanup Agreement (BCA) with the New York State Department of Environmental Conservation (NYSDEC) dated October 24, 2013.

This document presents the results of the sub-slab communication testing that was completed in the basement of the building and provides the active sub-slab depressurization (ASD) system design requirements.

1.1 Background and History

The Site consists of a single parcel totaling approximately 2.11 acres, located at 791 Washington Street in the City of Buffalo, Erie County, New York. The property is currently developed with a complex of five adjoining buildings totaling 617,627 square feet. The oldest of the five buildings was constructed circa 1890 as a portion of the Christian Weyand Brewery that operated at the Site until the enactment of prohibition. The building was purchased in 1920 by the Trico Products Corporation for the manufacturing of windshield wiper blades for the automobile industry. The remaining buildings were constructed from 1920 to 1954. The Trico Products Corporation operated at the Site until approximately 1993. The building complex is currently vacant and has been idle since at least 2000. Historic operations included electroplating, smelting, die-casting, rubber extrusion, and metal fabrication.

Based on previous investigation and the remedial investigation (RI) completed under the BCP, the following environmental conditions exist at the Site that should be addressed to fulfill the requirements of the Restricted Residential Track 4 cleanup:

- Semi-volatile organic compounds (SVOCs), metal analytes and polychlorinated biphenyls (PCBs) were detected in the soil/fill in limited locations beneath the building slab at concentrations slightly above their respective restricted-residential soil cleanup objectives (RRSCOs).

- Chlorinated volatile organic compounds (cVOCs) were detected in the soil/fill beneath the concrete slab of the former truck repair area slightly above their respective Protection of Groundwater SCOs (PGWSCOS), but below RRSCOs.
- cVOCs were detected in the groundwater in the central portion of the Site at concentrations exceeding their respective groundwater quality standards (GWQS); and may contribute to soil vapor intrusion (SVI).
- Based on the New York State Department of Health (NYSDOH) Soil Vapor Intrusion (SVI) Guidance decision matrices the building will require mitigation due to elevated trichloroethene (TCE) concentrations in sub-slab and indoor air samples.

NYSDEC issued a Decision Document (DD) dated July 2017. One of the components of the DD is that any on-site buildings will be required to have a sub-slab depressurization system, or other acceptable measure, to mitigate the potential migration of vapors into the building. Figure 3 provides the current building layout for the basement level.

Krog intends to renovate the building prior to occupancy. Figure 5 provides the proposed building layout for the basement level which will be used primarily for a parking garage and will be subject to the ASD system to address the SVI concerns.

2.0 ACTIVE SUB-SLAB DEPRESSURIZATION (ASD) SYSTEM DESIGN

2.1 General

An ASD system creates a low-pressure zone beneath a building slab using a powered fan connected via piping to create negative pressure beneath the building foundation. The low pressure field prevents soil gas from entering the building. Generally, essential components of an ASD include:

- a clean layer of coarse aggregate beneath the slab;
- installation of a suction pit beneath the slab for each building area separated by sub-slab walls (i.e., footings);
- installation of a vent stack from the suction pit(s) under the slab to the roof;
- installation of a continuous operation fan equipped with a pressure gauge to assure the system is under negative pressure; and,
- sealing all major slab and foundation penetrations, including joints, cracks and utility and pipe penetrations.

The active sub-slab depressurization (ASD) system proposed for this project has been designed in accordance with the EPA design document entitled "Radon Prevention in the Design and Construction of Schools and Other Large Buildings" Third Printing with Addendum, June 1994, the ASTM standard practice for "Installing Radon Mitigation Systems in Existing Low-Rise Residential Buildings" E2121-11, and the NYSDOH "Guidance for Evaluating Soil Vapor Intrusion in the State of New York" dated October 2006.

2.2 Pre-Design Field Testing

The design and installation of an effective ASD system within an existing structure requires numerous assumptions. However, the largest assumption is to gauge the actual and effective distance at which the proposed system will create a vacuum and influence the sub-slab pressure. On June 13, 2017, Benchmark-TurnKey performed field testing at the Site to determine the actual sub-slab communication conditions.

The communication testing consisted of using fan units to create vacuum in the sub-slab and measure the vacuum created with a digital manometer at some distance from the

vacuum point. Vacuum readings were measured with the digital manometer prior to initiating the fans units and creating the vacuum. No background vacuum measurements were noted prior to starting the fan units.

The fan units were mounted onto a 3-inch diameter PVC pipe that was inserted into 3-inch diameter cores in the basement floor slab. The fan units used for the communication testing were a Radon Away GP501 (capable of producing up to 4.2-inches of vacuum) and a Radon Away HS5000 (capable of creating up to 45-inches of vacuum).

The majority of the 3-inch diameter core holes used to for the communication testing were from the floor slab cores completed for the soil boring locations done as part of the RI. These will be referred to as the Suction Points (SPs). Additional SP locations were cored specifically for the communication testing to assess near columns or areas of the building where no soil borings were completed. To measure the vacuum created, ¼-inch diameter holes were drilled through the floor slab at some distance from the SP and the digital manometer was inserted into the hole to measure the vacuum. These locations are referred to as the Monitoring Points (MPs; notated as "M" on the figures and Table 1). The locations of the SPs and MPs are shown on Figure 4. There were nine (9) SPs (identified as SP-1 through SP-9) and 28 MPs. The MPs were given a number to correspond to the SP it was associated with and a letter that identified the specific location. [Example SP-1 had four (4) MPs: M1A, M1B, M1C and M1D]

To perform the test, vacuum was applied at the SP and the differential pressure (room ambient pressure minus the sub-slab pressure) was measured and recorded at each MP using a digital manometer. This process was repeated for various distances from the SP and various locations throughout the basement of the building.

2.3 Communication Results Summary

The results of the field measurements collected at the SP and MPs are presented in Table 1. Figure 4 provides the location of the SP and MPs along with the radius of influence (ROI) from the various testing locations throughout the basement.

Sub-slab communication was observed through the basement of the building. For purposes of the testing, vacuum measurements greater than -0.004 inches of water were considered to be acceptable. For purposes of data presentation and discussion, the basement has been divided into six (6) areas shown on Figures 4 and 5. They are as follows:

Area 1 - Southwest Corner: SP-9; M9A and M9B.
The ROI from SP-9 was greater than 50 feet.

Area 2 – Southeast Corner: SP-7; M7A and M7B
SP-8; M8A and M8B
The ROI from SP-7 was about 50 feet.
The ROI from SP-8 was greater than 65 feet.

Area 3 – East Central: SP-6; M6A through M6F
The ROI from SP-6 was greater than 45 feet.

Area 4 – Northeast Corner: SP-1; M1A through M1D
SP-2; M2A, M2B, and M2C
SP-3; M3A through M3D
SP-4; M4A
The ROI from SP-1 was about 50 feet.
The ROI from SP-2 was greater than 50 feet.
The ROI from SP-3 was greater than 40 feet.
The ROI from SP-4 was about 55 feet.

Area 5 – Northwest Corner: SP-4; M4B and M4C
SP-5; M5A and M5B
The ROI from SP-4 was about 40 feet.
The ROI from SP-5 was about 30 feet.

Area 6 – West Central: No testing completed.
No ASD will be installed in this area. This portion of the building contains subbasement areas that are inaccessible and will not be occupied. Additionally, the boiler room sub-basement which is currently filled with water will be emptied (as

outlined in the Remedial Action Work Plan[1]) and filled with flowable fill material which will not allow for air flow after it is filled.

In general, the testing demonstrated that vacuum influence of -0.004 inches of H_2O or greater were observed at distances of about 50 feet from the SPs in Areas 1 through 4. The vacuum influence of -0.004 inches of H_2O in Area 5 was between 25 and 40 feet from the SPs.

[1] "Remedial Action Work Plan, Former Trico Plant, BCP Site No. C915281, Buffalo, New York" Prepared for 847 Main Street, LLC and 791 Washington Street, LLC. Prepared by Benchmark Environmental Engineering and Science, PLLC. Dated July 2017.

3.0 ASD SYSTEM DESIGN-BUILD APPROACH

Due to the complex nature of the building (five adjoining/interconnected buildings with different basement elevations and foundation conditions) and the basement footprint requiring ASD (approximately 75,000 square feet) the system design and installation is recommended to be completed as a design-build project.

A design-build project would allow the ASD system to be built using performance-based testing during the installation. This will minimize the need for extensive and costly work plan development, reduce costs typically associated with conservative and often over-engineered designs, and allow the installation to progress in a step-wise manner to achieve sub-slab vacuum coverage goals rather than just following a pre-determined design layout. Typical of ASD systems, as multiple suction points are utilized, the sub-slab vacuum and associated communication typically increase, often reducing the number of suction points needed to achieve the performance goal.

3.1 Preliminary ASD System Design

A preliminary ASD system design has been developed based on the communication testing completed and the proposed basement layout provided by Krog. The preliminary ASD system design provides an estimate of the number of suction points, approximate locations and design, piping size, and type of fan units to be use. The performance objective of the ASD is to achieve and maintain a minimum negative pressure differential of -0.004 inches of H_2O within the sub-slab of the 75,000 square foot area identified for ASD.

Figure 5 identifies the approximate location of the five (5) individual ASD systems and up to 37 suction pits locations proposed as part of the preliminary design. The suction pit placement was based on interior column locations and areas that will not be used for parking. The suction pits will be constructed by creating an approximate 2 ft x 2 ft x 6-inch (min. depth) void beneath the slabs refer to Figure 6 for the typical suction pit detail. A clean aggregate (pea stone or equivalent, gas permeable) will be placed within the suction pit around the suction pipe. The suction pipe will consist of a minimum of 3-inch inner diameter PVC piping. The concrete floor slab will be replaced to create the surface seal over the suction pit.

3.1.1 Area 1 – Southwest System

Up to ten (10) suction pits locations are shown in Area 1, which encompasses nominally 18,000 sf. Assuming a 50-foot ROI per suction pit (nominally 8,000 sf of coverage), a minimum negative pressure differential of -0.004 inches of H_2O may be achieved throughout this area with fewer suction pits given the geometry of the area and the locations available to install the pits. The suction pits would be operated with a single fan unit (OBAR GBR 89 high performance radial blower or equivalent, see Appendix A for specifications).

3.1.2 Area 2 – South East System

Up to six (6) suction pits locations are shown in Area 2, which encompasses nominally 13,000 SF. Assuming a 50-foot ROI per suction pit (nominally 8,000 sf of coverage), a minimum negative pressure differential of -0.004 inches of H_2O may be achieved throughout this area with fewer suction pits given the geometry of the area and the locations available to install the pits. The suction pits would be operated with a single fan unit (OBAR GBR 89 high performance radial blower or equivalent).

3.1.3 Area 3 – West Central System

Up to three (3) suction pits locations are shown in Area 3, which encompasses nominally 9,000 SF. Assuming a 50-foot ROI per suction pit (nominally 8,000 sf of coverage), a minimum negative pressure differential of -0.004 inches of H_2O may be achieved throughout this area with 2 suction pits given the geometry of the area and the locations available to install the pits. The suction pits would be operated with a single fan unit (OBAR GBR 76 high performance radial blower or equivalent, see Appendix A for specification).

3.1.4 Area 4 – Northeast System

Up to twelve (12) suction pits locations are shown in Area 4, which encompasses nominally 24,000 SF. Assuming a 50-foot ROI per suction pit (nominally 8,000 sf of coverage), a minimum negative pressure differential of -0.004 inches of H_2O may be achieved throughout this area with fewer suction pits given the geometry of the area and the locations available to install the pits. The suction pits would be operated with a single fan unit (OBAR GBR 89 high performance radial blower or equivalent).

3.1.5 Area 5 – Northwest System

Up to six (6) suction pits locations are shown in Area 5, which encompasses nominally 10,000 SF. Assuming a 30-foot ROI per suction pit (nominally 2,800 sf of coverage), a minimum negative pressure differential of -0.004 inches of H_2O may be achieved throughout this area with fewer suction pits given the geometry of the area and the locations available to install the pits. The suction pits would be operated with a single fan unit (OBAR GBR 76 high performance radial blower or equivalent).

3.2 ASD System Installation

Installation of the ASD systems on a design-build approach will allow the systems performance to be tested in real time during installation. Alterations to improve system functionality can be made during system installation with minimal disruption to the installation process.

3.2.1 *Piping/Fan/Exhaust*

3-inch diameter Schedule 40 PVC suction pipes from the suction pits would be installed and manifolded with other suction pipes from that ASD system via 3-inch diameter horizontal piping connected to a 6-inch vertical Schedule 40 PVC stack pipe, which will extend to a roof-mounted fan. The horizontal pipes will be pitched back toward the nearest suction pit for rain or condensate water diversion. Supports for the horizontal runs of pipe are to be provided at a maximum distance of every 6 feet. The vertical stack pipe will be located in a vertical utility corridor, allowing the stack pipe to be run from the basement to the roof. The vertical stack pipe is to be supported, secured above or below penetration of floors, ceiling and roofs or at least every 8 feet for runs that do not penetrate floors, ceiling or roofs. The fan unit will be mounted above the roof line. The exhaust is to be located a minimum of 10 feet from any opening (window or door leading to occupied space) or any fresh air intakes and extend a minimum of 12" above the roof height. Each fan will be hard-wired to a dedicated electrical circuit for which a dedicated breaker will be installed and properly labeled in the breaker box.

Upon system installation all slab, wall, floor or ceiling penetrations, expansion joints, cracks, and/or any other gaps in the slab and/or subsurface walls, will be sealed using a polyurethane sealant applied in accordance with manufacturer's instructions.

3.2.2 *ASD System Monitoring*

Continuous remote monitoring of the ASD system will be done using a Sensaphone® Cell 682 auto-dialer (or equivalent; refer to Appendix B for specifications), which provides a website-based platform to monitor vacuum measurements and transmit alarm notifications via email and/or voice-based messaging if the vacuum falls below user-prescribed levels. A battery backup provides continued monitoring/notification in case of a power failure. The 4-20 mA scalable output signal from each of the magnehelic gauges will be tied to the auto-dialer, which will be converted to vacuum in inches of water column to facilitate website monitoring. A list of designated personnel will be contacted in the event of an alarm condition (e.g., vacuum drops below 50% of normal conditions, indicative of fan failure or extraction piping obstruction/break) with repeat contacts made until the alarm condition is acknowledged.

4.0 POST MITIGATION/CONFIRMATION TESTING

4.1 General

The ASD System will require performance testing to confirm the system's effectiveness and proper installation. Post-mitigation testing will be conducted prior to building occupation and within 60 days of system installation. The following steps will be performed, documented, and then reported in the Final Engineering Report.

4.2 Visual Inspection

All system components will be visually inspected by a qualified person to ensure proper installation. With the depressurization system operating, smoke tubes may be used to check for leaks through floor joints and at suction points. Any leaks will be identified, noted, and repaired prior to continuing with testing and confirmation.

The U-Tube Manometers installed on each suction pipe and the Magnahelic Gauges installed on the system stack pipes will be observed for vacuum readings. These reading will be compared to the system start-up measurements. If there is change in the vacuum readings of 40% or more from start-up, confirmation testing as discussed below will be performed on the particular suction pit and/or system where the difference was noted.

4.2.1 ASD System Confirmation

A field test will be conducted to confirm the negative pressure created beneath the slab. One-quarter inch diameter holes will be drilled through the concrete slab and into the sub-slab to measure vacuum in the subsurface using a digital manometer or comparable instrument at the test locations. If adequate depressurization is not occurring the following procedures will be enacted:

- All testing procedures will be repeated to ensure proper testing protocol; and
- Client and NYSDEC personnel will be informed of inadequate vacuum results.

Troubleshooting of the system will then be completed, including the following:

- Confirmation of fan operation;
- Inspection of and sealing of all major entry routes and penetrations (if necessary);
- Location of potential sub-slab barriers; and,

- Inspection of the HVAC system and determination whether the HVAC system has a negative effect on the performance of the ASD system.

Upon completion of troubleshooting as described above, if re-testing sub-slab test points indicates insufficient communication the following measures will be considered:

- Adjustment of the HVAC system; and/or,
- Installation of additional suction points.

5.0 ASD System Operation, Maintenance, & Monitoring

5.1 ASD Systems Operation

The five (5) ASD Systems will be designed for continuous operation with minimal maintenance and/or operational oversight. It is imperative however, that the system is inspected annually to ensure consistent and optimal operation.

5.2 Annual Certification/Inspection

An annual system certification inspection and report documenting that the system is performing properly and remains effective will be required by the NYSDEC and is to be certified by a professional engineer or environmental professional. The certification report will contain an annual inspection checklist. The annual inspection will require:

- system components to be visually inspected by a qualified person;
- the exhaust fan to be inspected for signs of abnormal operation or bearing failure (service and/or replacement if necessary);
- discharge location inspection - to verify no air intake has been located nearby vent pipe;
- HVAC system inspection to determine if it is being maintained and operated as designed; and,
- detailed floor, wall, and slab inspection for cracks (resealing if necessary); smoke tubes may be used to check for leaks through floor joints and at suction points with the ASD system running.

5.3 System Failure Protocols

In the event that the system is not working properly (i.e., loss of vacuum), the Sensaphone® Cell 682 auto-dialer or equivalent will contact designated personnel with repeat contacts made until the alarm condition is acknowledged. The following protocol should be followed:

- The building owner/operator and head maintenance person should be contacted immediately;

- The building owner/operator should apprise the NYSDEC of the system failure;
- The date and time should be recorded;
- The warning device should be identified (e.g., Gauge 1, 2, etc.)
- The fans should be inspected to confirm operation; if a circuit breaker was tripped causing the fan to cease operation, the circuit breaker should be reset;
- System components should be visually inspected for signs of damage or dysfunction;

If the system failure is not remedied, the building owner should contact a qualified engineer or other person with experience in ASD systems to inspect the system and take the necessary measures to place the system back in service. The NYSDEC should be apprised of the system failure and what measures were taken to place the system back in service.

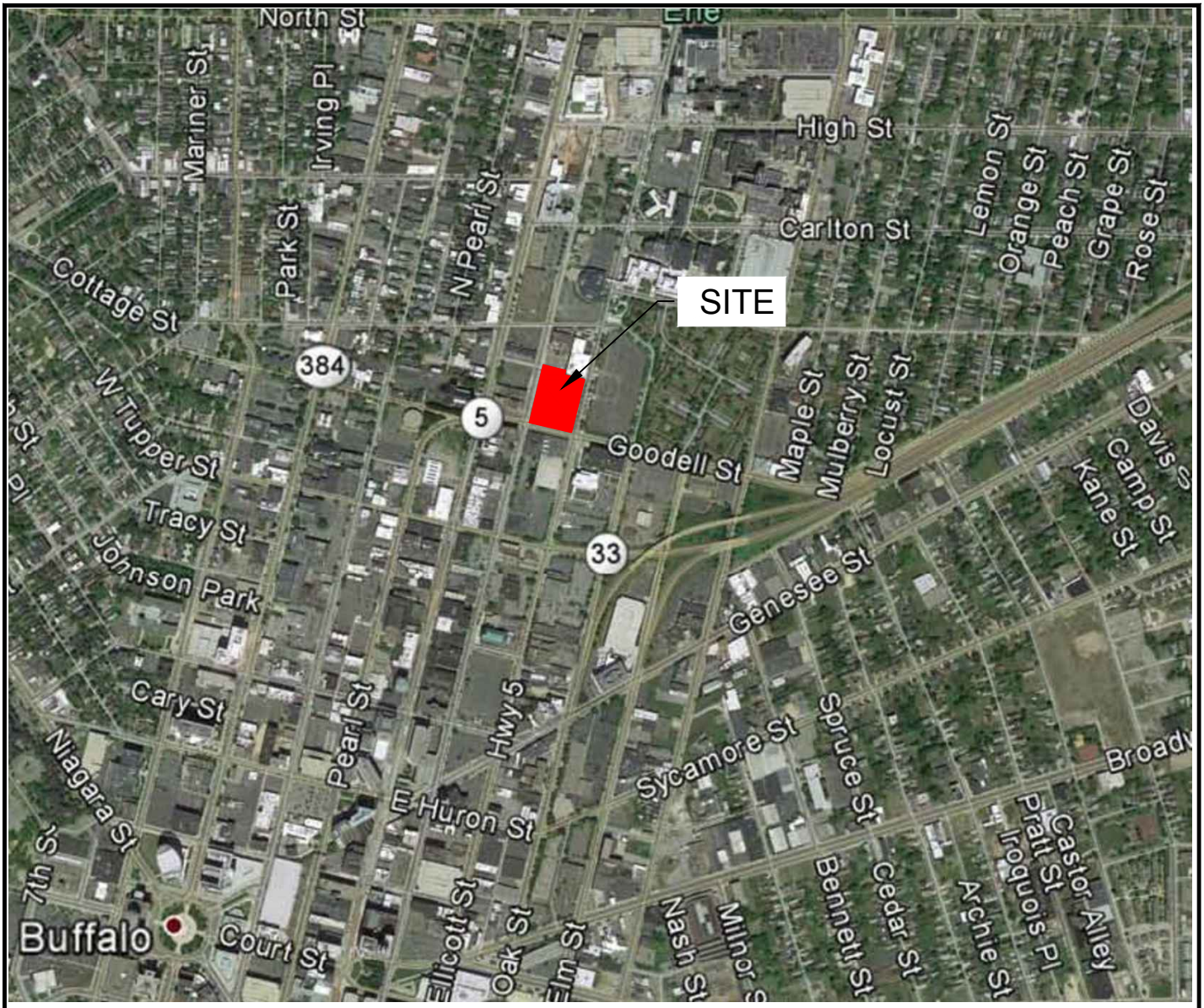
TABLE

Table 1
Sub-Slab Communication Testing Results
Sub-Slab Communication Testing Results and Preliminary ASD System Design
Former Trico Plant

Vacuum Point	Vacuum Monitoring Point	Distance (ft)	Direction	Manometer Reading (in of H2O)	Fan Vacuum (in of H2O)
SP-1	M1A	15	W	0.1	3.8 inch vacuum
SP-1	M1B	36	W	0.017	3.8 inch vacuum
SP-1	M1C	50	W	0.005	3.8 inch vacuum
SP-1	M1D	28	N	0.065	3.8 inch vacuum
SP-1	M1D	28	N	0.183	12 inch vacuum
SP-1	M1C	50	W	0.019	12 inch vacuum
SP-2	M2A	30	S	0.35	16 inch vacuum
SP-2	M1C	42	S	0.162	16 inch vacuum
SP-2	M2B	54	E	0.025	16 inch vacuum
SP-2	M2C	51	NE	0.012	16 inch vacuum
SP-3	M3A	33	E	0.021	4 inch vacuum
SP-3	M3B	18	W	0.231	4 inch vacuum
SP-3	M3C	40	W	0.196	4 inch vacuum
SP-3	M3D	30	S	0.051	4 inch vacuum
SP-4	M3C	90	E	0	3.9 inch vacuum
SP-4	M4A	55	E	0.005	3.9 inch vacuum
SP-4	M4B	36	W	0.005	3.9 inch vacuum
SP-4	M4C	40	W	0.001	3.9 inch vacuum
SP-5	M4C	23	SW	0.005	3.8 inch vacuum
SP-5	M4C	23	SW	0.003	3.8 inch vacuum
SP-5	M5A	37	SW	0.002	3.8 inch vacuum
SP-5	M5B	18	S	0.05	3.8 inch vacuum
SP-6	M6A	20	W	0.149	3.67 inch vacuum
SP-6	M6B	21	NW	0.375	3.67 inch vacuum
SP-6	M6C	54	NW	0.284	3.67 inch vacuum
SP-6	M6D	42	N	0.034	3.67 inch vacuum
SP-6	M6E	29	S	0.071	3.67 inch vacuum
SP-6	M6F	41	SW	0.052	3.67 inch vacuum
SP-7	M7A	52	NW	0.062	0.8 inch vacuum
SP-7	M7B	62	NW	0.051	0.8 inch vacuum
SP-8	M8A	40	N	0.226	2.5 inch vacuum
SP-8	M8B	66	N	0.155	2.5 inch vacuum
SP-9	M9A	50	N	0.009	1.7 inch vacuum
SP-9	M9B	49	NE	0.007	1.7 inch vacuum

FIGURES

FIGURE 1



SCALE: 1 INCH = 1,000 FEET
SCALE IN FEET
(approximate)

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PROJECT NO.: 0092-016-001

DATE: AUGUST 2017

DRAFTED BY: RFL-CMC

SITE LOCATION AND VICINITY MAP

PRELIMINARY ASD SYSTEM DESIGN

FORMER TRICO PLANT
791 WASHINGTON STREET
BUFFALO, NEW YORK

PREPARED FOR

THE KROG GROUP, LLC

DATE: AUGUST 2017
DRAFTED BY: RFL-CMC

FIGURE 2

SITE PLAN (AERIAL)

PRELIMINARY ASD SYSTEM DESIGN

FORMER TRICO PLANT
791 WASHINGTON STREET
BUFFALO, NEW YORK

PREPARED FOR
THE KROG GROUP, LLC

BENCHMARK ENVIRONMENTAL ENGINEERING & SCIENCE, PLLC
TURNKEY ENVIRONMENTAL RESTORATION, LLC
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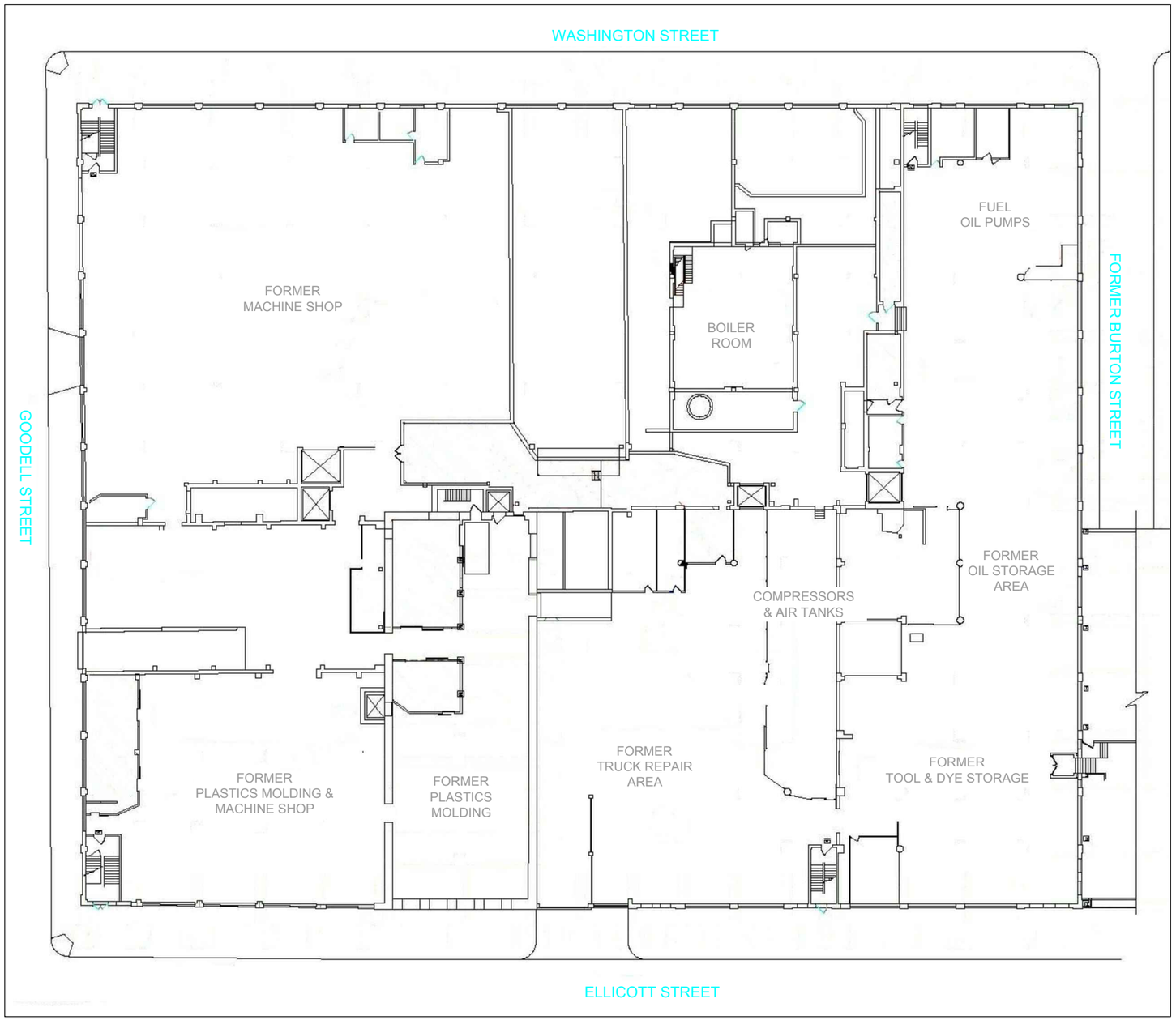
JOB NO.: 0092-016-001



SCALE: 1 INCH = 40 FEET
SCALE IN FEET
(approximate)

DATE: AUGUST 2017
DRAFTED BY: RFL-CMC

TRICO BUILDING CURRENT BASEMENT LAYOUT

PRELIMINARY ASD SYSTEM DESIGN

FORMER TRICO PLANT
791 WASHINGTON STREET
BUFFALO, NEW YORK

PREPARED FOR
THE KROG GROUP, LLC

BENCHMARK ENVIRONMENTAL ENGINEERING & SCIENCE, PLLC
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FIGURE 3

LEGEND:

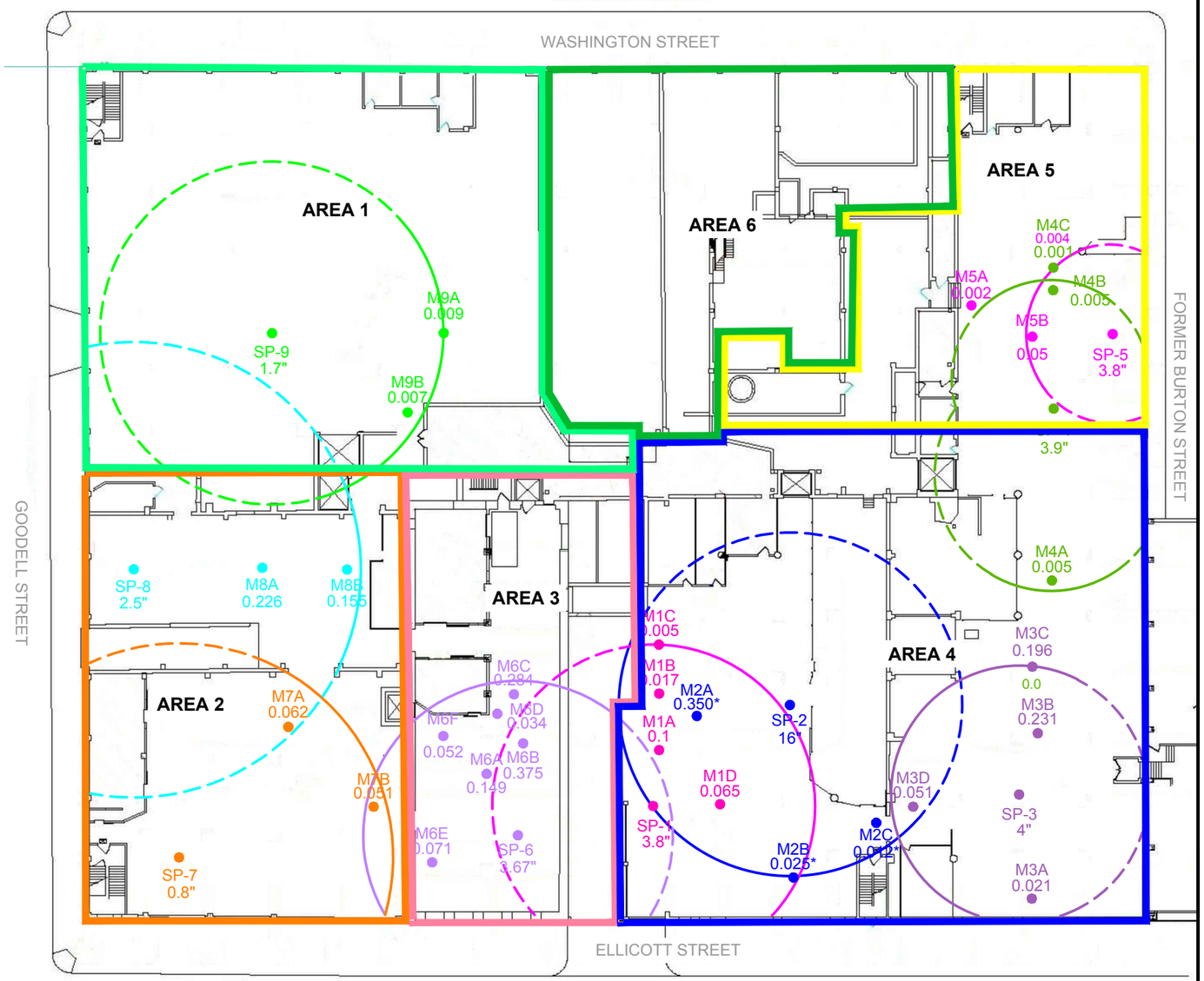
SPHERE OF INFLUENCE OF COMMUNICATION TESTING SUCTION POINTS

SP-5 ● 3.8" SUCTION POINT LOCATIONS WITH ASSOCIATED VACUUM MEASUREMENT

M4A ● 0.005 COMMUNICATION MEASUREMENT LOCATIONS WITH ASSOCIATED VACUUM READING

Vacuum Point	Vacuum Monitoring Point	Distance (ft)	Direction	Manometer Reading (in of H2O)	Fan Vacuum (in of H2O)
SP-1	M1A	15	W	0.1	3.8 inch vacuum
SP-1	M1B	36	W	0.017	3.8 inch vacuum
SP-1	M1C	50	W	0.005	3.8 inch vacuum
SP-1	M1D	28	N	0.065	3.8 inch vacuum
SP-1	M1D	28	N	0.183	12 inch vacuum
SP-1	M1C	50	W	0.019	12 inch vacuum
SP-2	M2A	30	S	0.35	16 inch vacuum
SP-2	M1C	42	S	0.162	16 inch vacuum
SP-2	M2B	54	E	0.025	16 inch vacuum
SP-2	M2C	51	NE	0.012	16 inch vacuum
SP-3	M3A	33	E	0.021	4 inch vacuum
SP-3	M3B	18	W	0.231	4 inch vacuum
SP-3	M3C	40	W	0.196	4 inch vacuum
SP-3	M3D	30	S	0.051	4 inch vacuum
SP-4	M3C	90	E	0	3.9 inch vacuum
SP-4	M4A	55	E	0.005	3.9 inch vacuum
SP-4	M4B	36	W	0.005	3.9 inch vacuum
SP-4	M4C	40	W	0.001	3.9 inch vacuum
SP-5	M4C	23	SW	0.005	3.8 inch vacuum
SP-5	M4C	23	SW	0.003	3.8 inch vacuum
SP-5	M5A	37	SW	0.002	3.8 inch vacuum
SP-5	M5B	18	S	0.05	3.8 inch vacuum
SP-6	M6A	20	W	0.149	3.67 inch vacuum
SP-6	M6B	21	NW	0.375	3.67 inch vacuum
SP-6	M6C	54	NW	0.284	3.67 inch vacuum
SP-6	M6D	42	N	0.034	3.67 inch vacuum
SP-6	M6E	29	S	0.071	3.67 inch vacuum
SP-6	M6F	41	SW	0.052	3.67 inch vacuum
SP-7	M7A	52	NW	0.062	0.8 inch vacuum
SP-7	M7B	62	NW	0.051	0.8 inch vacuum
SP-8	M8A	40	N	0.226	2.5 inch vacuum
SP-8	M8B	66	N	0.155	2.5 inch vacuum
SP-9	M9A	50	N	0.009	1.7 inch vacuum
SP-9	M9B	49	NE	0.007	1.7 inch vacuum

BASEMENT



NOTE:

- VACUUM MEASURED IN INCHES OF WATER
- FORMER INVESTIGATION LOCATIONS UTILIZED AS VACUUM SUCTION LOCATIONS
- DASHED LINES WHERE SPHERE OF INFLUENCE IS INFERRED

40' 0' 40' 80'

SCALE: 1 INCH = 40 FEET
SCALE IN FEET
(approximate)

N

DATE: JULY 2016
DRAFTED BY: RFL

BENCHMARK ENVIRONMENTAL ENGINEERING & SCIENCE, PLLC
TURNKEY ENVIRONMENTAL RESTORATION, LLC
2558 HAMBURG TURNPIKE, SUITE 300, BUFFALO, NY 14218, (716) 856-0599

JOB NO.: 0092-016-001

TRICO BUILDING BASEMENT SUB-SLAB COMMUNICATION RESULTS

SUB-SLAB COMMUNICATION TESTING RESULTS & PRELIMINARY ASD SYSTEM DESIGN

FORMER TRICO PLANT
791 WASHINGTON STREET
BUFFALO, NEW YORK

PREPARED FOR
THE KROG GROUP, LLC

FIGURE 4

LEGEND:

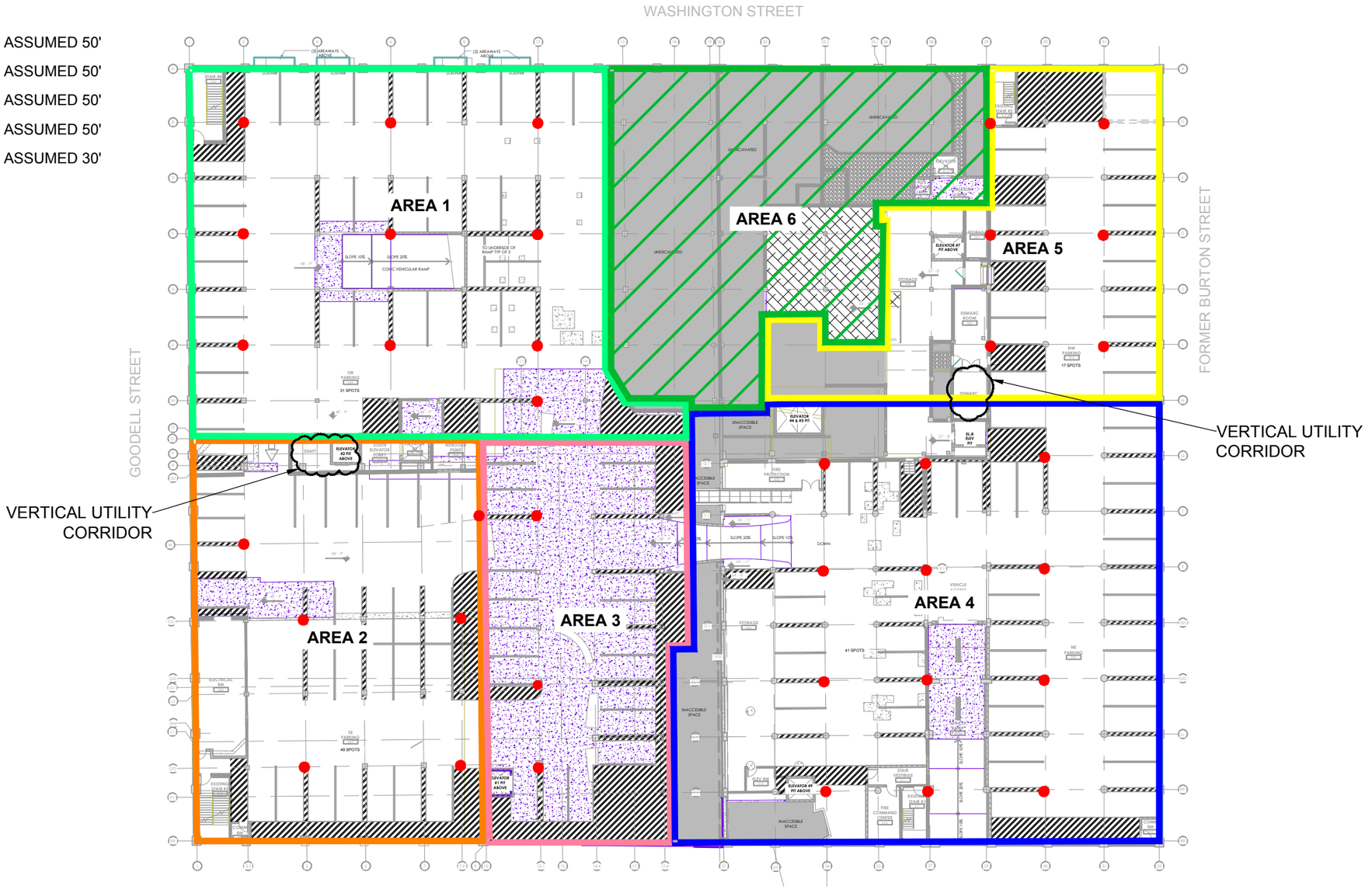
- LOCATION OF FLOWABLE FILL PLACEMENT IN SUB-BASEMENT OF BOILER ROOM
- AREA OF RENOVATION INVOLVING REMOVAL AND REPLACEMENT OF EXISTING CONCRETE WITH NEW CONCRETE
- AREA THAT WILL NOT BE USED FOR PARKING
- AREA THAT WILL NOT BE ADDRESSED BY ASD SYSTEM
- PROPOSED SUCTION POINT LOCATIONS

- AREA 1 ROI ASSUMED 50'
- AREA 2 ROI ASSUMED 50'
- AREA 3 ROI ASSUMED 50'
- AREA 4 ROI ASSUMED 50'
- AREA 5 ROI ASSUMED 30'
- AREA 6

40' 0' 40' 80'

SCALE: 1 INCH = 40 FEET
SCALE IN FEET
(approximate)

N



DATE: AUGUST 2017
DRAFTED BY: CMC

BENCHMARK ENVIRONMENTAL ENGINEERING & SCIENCE, PLLC
TURNKEY ENVIRONMENTAL RESTORATION, LLC
2558 HAMBURG TURNPIKE, SUITE 300, BUFFALO, NY 14218, (716) 856-0599

JOB NO.: B0092-016-001

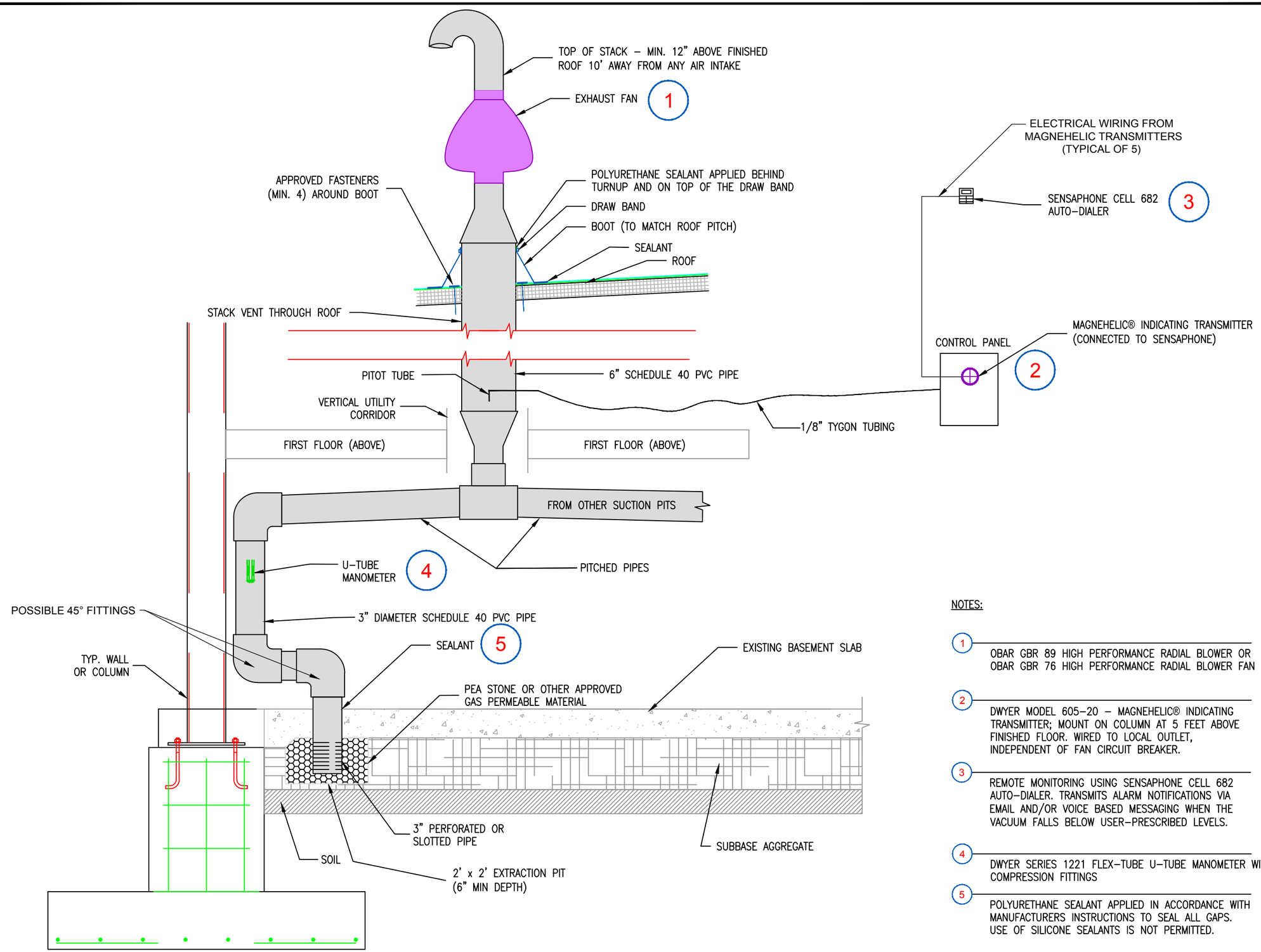
SVI DESIGN AND BASEMENT REDEVELOPMENT MAP

SUB-SLAB COMMUNICATION TESTING RESULTS & PRELIMINARY ASD SYSTEM DESIGN

FORMER TRICO PLANT
791 WASHINGTON STREET
BUFFALO, NEW YORK

PREPARED FOR
THE KROG GROUP, LLC

FIGURE 5



NOTES:

1. OBAR GBR 89 HIGH PERFORMANCE RADIAL BLOWER OR OBAR GBR 76 HIGH PERFORMANCE RADIAL BLOWER FAN
2. DWYER MODEL 605-20 – MAGNEHELIC® INDICATING TRANSMITTER; MOUNT ON COLUMN AT 5 FEET ABOVE FINISHED FLOOR. WIRED TO LOCAL OUTLET, INDEPENDENT OF FAN CIRCUIT BREAKER.
3. REMOTE MONITORING USING SENSAPHONE CELL 682 AUTO-DIALER. TRANSMITS ALARM NOTIFICATIONS VIA EMAIL AND/OR VOICE BASED MESSAGING WHEN THE VACUUM FALLS BELOW USER-PRESCRIBED LEVELS.
4. DWYER SERIES 1221 FLEX-TUBE U-TUBE MANOMETER WITH COMPRESSION FITTINGS
5. POLYURETHANE SEALANT APPLIED IN ACCORDANCE WITH MANUFACTURERS INSTRUCTIONS TO SEAL ALL GAPS. USE OF SILICONE SEALANTS IS NOT PERMITTED.

DATE: AUGUST 2017
DRAFTED BY: CMC

BENCHMARK ENVIRONMENTAL ENGINEERING & SCIENCE, PLLC
TURNKEY ENVIRONMENTAL RESTORATION, LLC
2558 HAMBURG TURNPIKE, SUITE 300, BUFFALO, NY 14218, (716) 856-0599

JOB NO.: B0092-016-001

TYPICAL ASD SYSTEM SCHEMATIC

PRELIMINARY ASD SYSTEM DESIGN
FORMER TRICO PLANT
BUFFALO, NEW YORK
PREPARED FOR
THE KROG GROUP, LLC

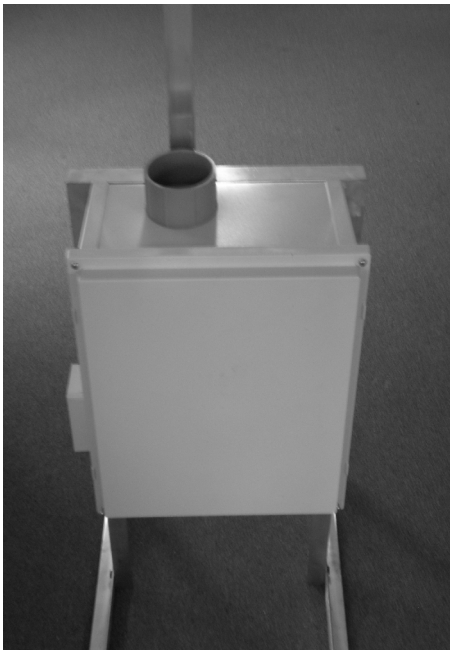
FIGURE 6

APPENDIX A

EXHAUST FAN & VACUUM GUAGE PRODUCT INFORMATION

THE OBAR GBR89
COMPACT RADIAL BLOWER

Based on 25 years of experience and 2 years of research and development, the patent pending GBR series of compact radial blowers provide the perfect combination of performance and design.



GBR89 WITH ROOF MOUNT

PERFORMANCE

- GBR89 HA 14” WC at 100CFM max flow 500 CFM.
- Built in speed control to customize performance.
- Condensate bypass built in.
- 12 month warranty 40,000 hr sealed bearings.

DESIGN

- Our modular design means the blower and manifold assembly can be removed and replaced as a unit. This makes repairs cost effective and easy and allows contractors to upgrade systems simply by swapping assemblies.
- The GBR series is based on a bypass blower designed to handle combustible materials.
- The housing is not required to be air tight so you can add gauges and alarms without compromising the system.
- Built in condensate bypass.
- Built in speed control.
- Quick disconnect electrical harness.
- All UL listed components including UL listed enclosure for outside use.
- Wall fastening lugs included.
- GBR series roof and wall mounts available to quickly configure the blowers for your installation while providing a custom built look.
- Compact design 18”x 16”x 10” weighing only 18 lbs.
- 4” schedule 40 inlet and 6” schedule 40 exhaust.

Enclosure Specifications
Rating:

Ingress Protection (EN 60529): 66/67

Electrical insulation: Totally insulated

Halogen free (DIN/VDE 0472, Part 815): yes

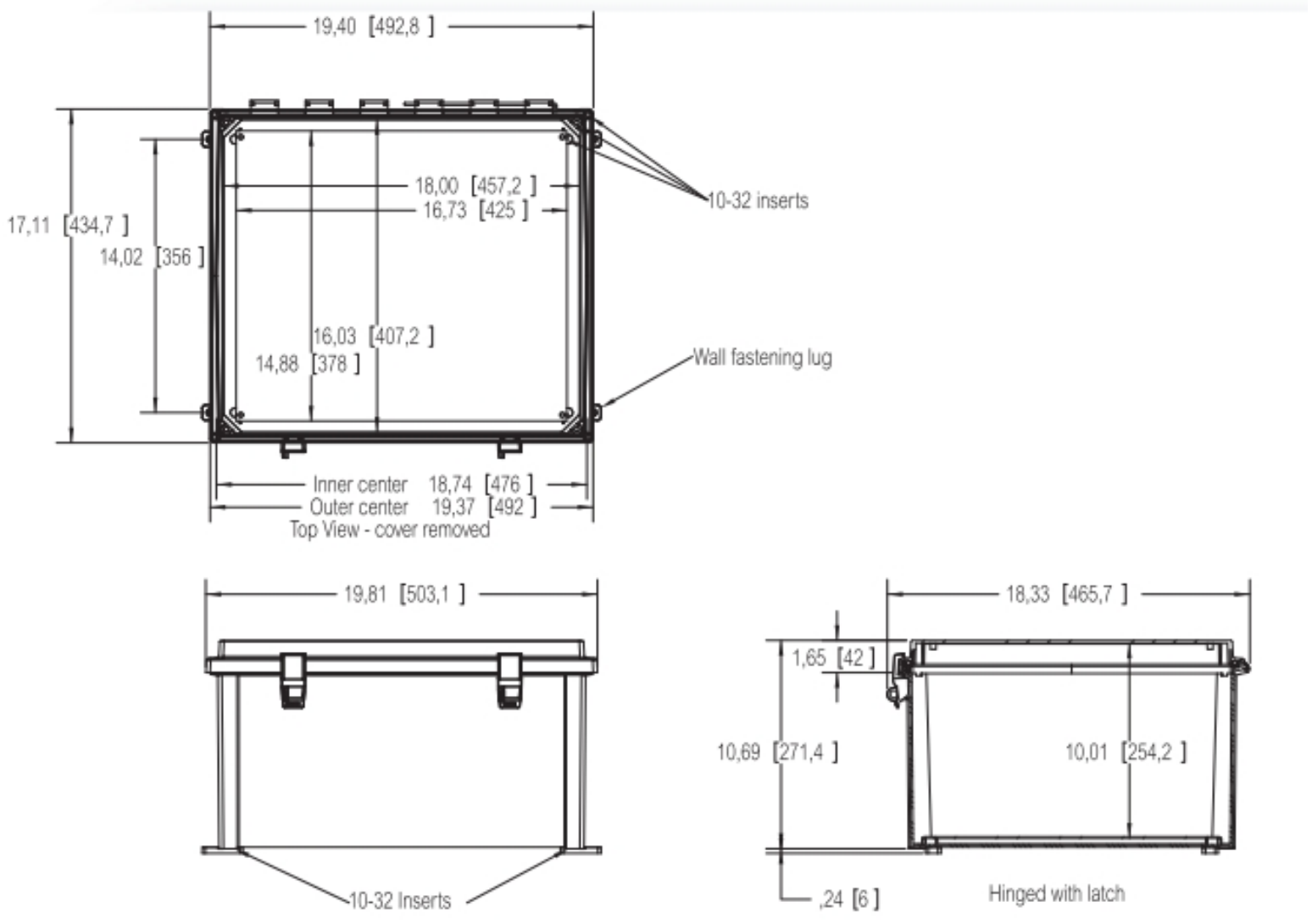
UV resistance: UL 508

Flammability Rating (UL 746 C 5): complies with UL 508

Glow Wire Test (IEC 695-2-1) °C: 960

NEMA Class: UL Type 4, 4X, 6, 6P, 12 and 13

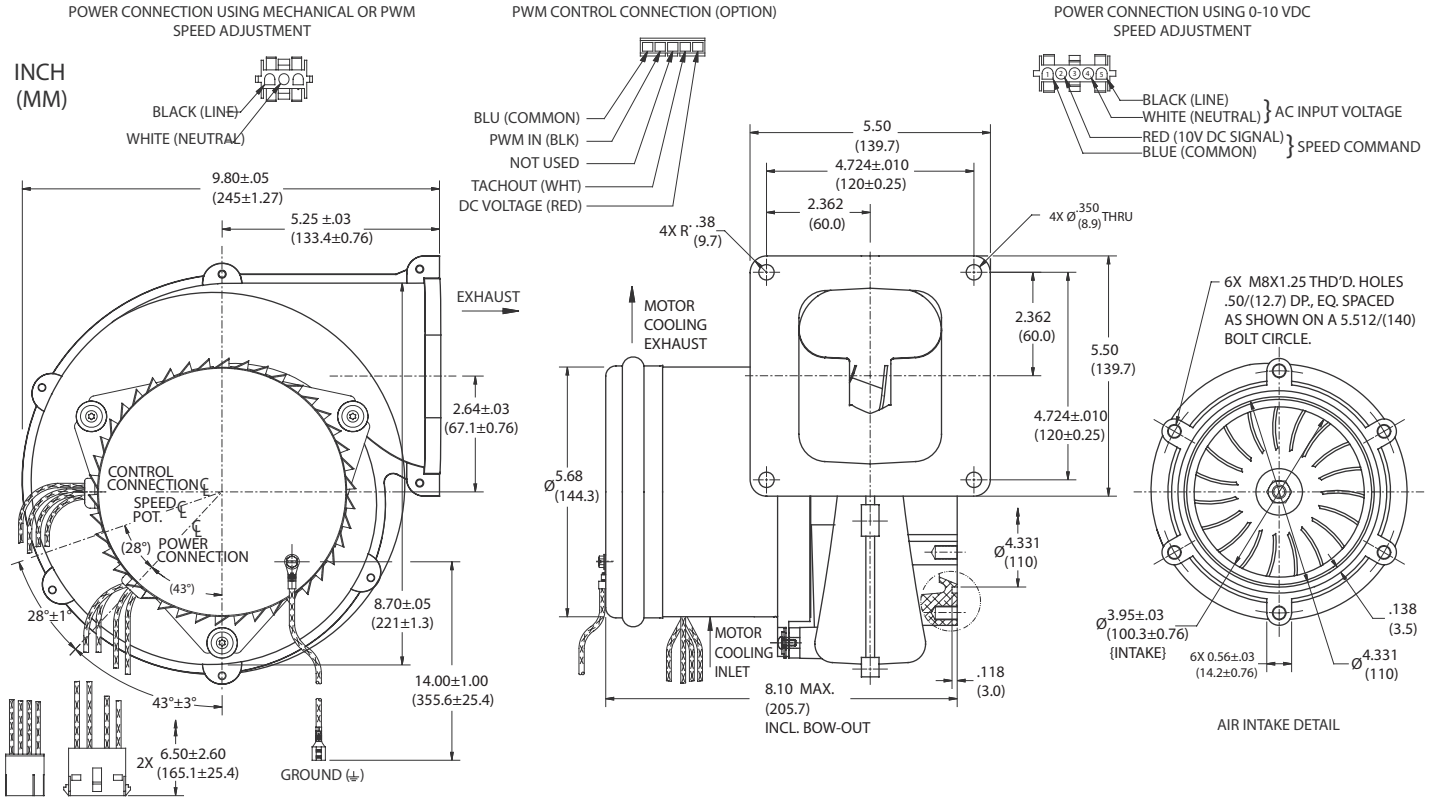
Certificates: Underwriters Laboratories



High Voltage Brushless DC Blowers

Nautilair (TM) 8.9" (226mm) Variable Speed Blower

240 Volt AC Input, Single Phase, High Output



		Part/ Model Number		
Specification	Units	150240	150241	150242
Speed Control	-	Mechanical	0-10 VDC	PWM

Notes:

- **Input Voltage Range:** 216 - 264 Volts AC RMS, 50/60 Hz, single phase.
- **Input Current:** 10 amps AC RMS
- **Operating Temperature (Ambient Air and Working Air):** 0°C to 50°C
- **Storage Temperature:** -40°C to 85°C
- **Dielectric Testing:** 1800 Volts AC RMS 60 Hz applied for one second between input pins and ground, 3mA leakage maximum.
- **Speed Control Methods:** PWM (Pulse Width Modulation). Speed control input signal of 15 - 45 VDC @ 500 Hz - 10 kHz, and tachometer output (2 Pulses / Revolution).
  Optional tachometer output (3 Pulses / Revolution).
  0 to 10 VDC with a speed control input current of 5 mA to 20 mA at 10 VDC Input with multi-turn potentiometer set to minimum resistance (fully clockwise).
  Mechanical: A potentiometer is available for speed control of the blower. The potentiometer can be preset for a specific speed. Access for speed adjustment located in motor housing.
  4-20mA speed control available.
- **Approximate Weight:** 9.3 Lbs. / 4.2 Kg.
- **Option Card available for Customization**
- **Regulatory Agency Certification:** Underwriters Laboratories Inc. UL507 Recognized under File E94403 and CSA C22.2#133 under File LR43448
- **Design Features:** Designed to provide variable airflow for low NOx & CO emission in high efficiency gas fired combustion systems. Built with non-sparking materials. Blower housing assembly constructed of die cast aluminum. Impeller constructed from hardened aluminum. Rubber isolation mounts built into blower construction to dampen vibration within the motor. Two piece blower housing assembly sealed with O-ring gasket for combustion applications. Customer is responsible to check for any leakage once the blower is installed into the final application.
- **Miscellaneous:** Blower inlet, discharge, and all motor cooling inlet and discharge vents must not be obstructed. Motor ventilation air to be free of oils and other foreign particles, (i.e. breathing quality air). Blower is to be mounted so ventilation air cannot be re-circulated.
  POWER CONNECTION (3 CAVITY): Blower connector, AMP Universal MATE-N-LOK, part no. 1-480701-0.
  POWER CONNECTION (5 CAVITY): Blower connector, AMP Universal MATE-N-LOK, part no. 350810-1.
  SPEED CONNECTION (5 CAVITY): Blower connector, Molex Mini-Fit Jr., part no. 39-01-4057.
  Mating harnesses available upon request.

AMETEK TECHNICAL & INDUSTRIAL PRODUCTS
627 Lake Street, Kent OH 44240
USA: +1 215-256-6601 - Europe: +44 (0) 845 366 9664 - Asia: +86 21 5763 1258
www.ametektip.com

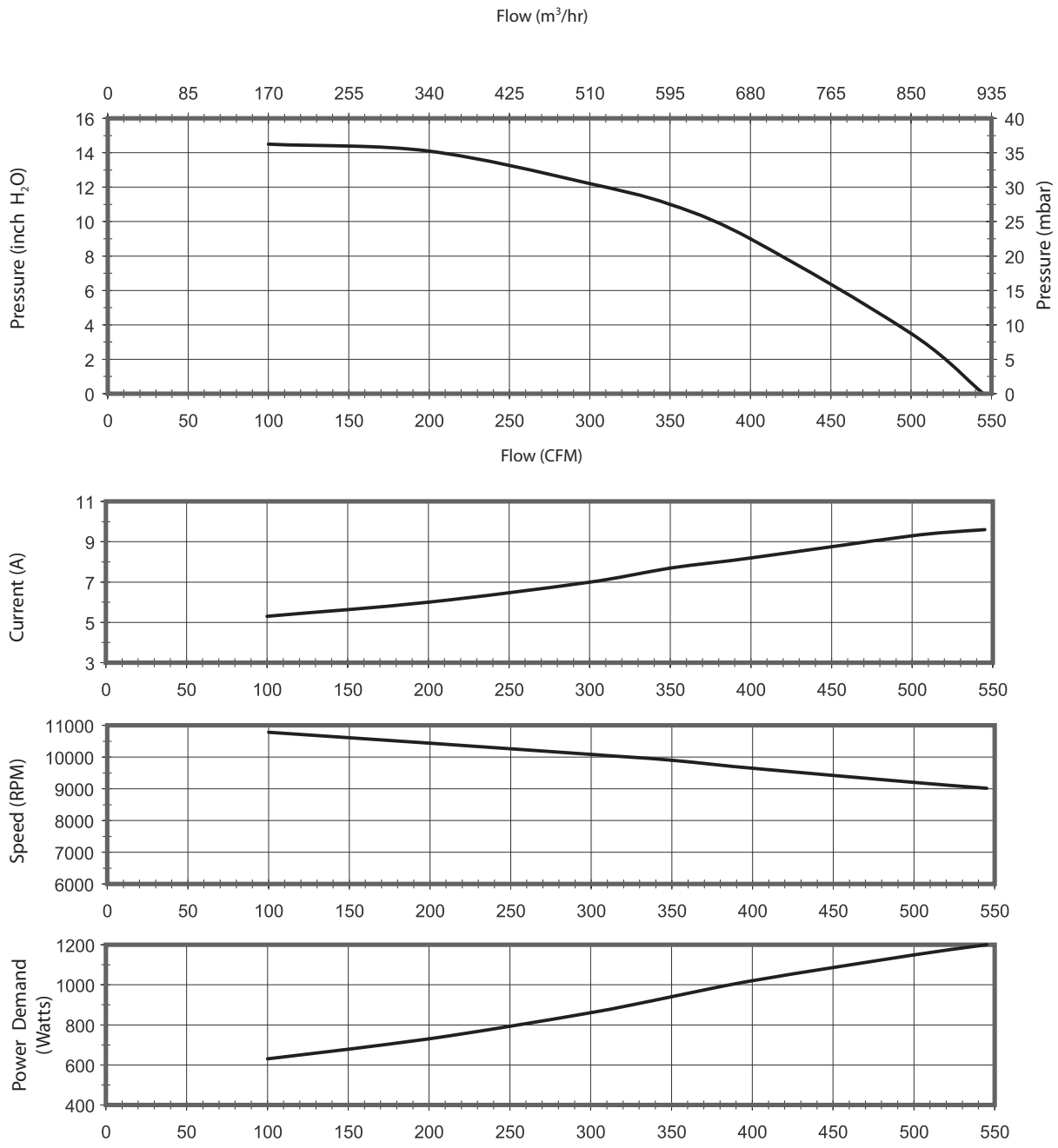
AMETEK
PRECISION MOTION CONTROL

Nautilair (TM) 8.9" (226mm) Variable Speed Blower

Nautilair

240 Volt AC Input, Single Phase, High Output

Typical Performance



Data presented represents blower performance at STANDARD AIR DENSITY, .075 lb/ft³ (29.92" Hg, Sea Level, 68° F)
Vacuum performance available upon request.

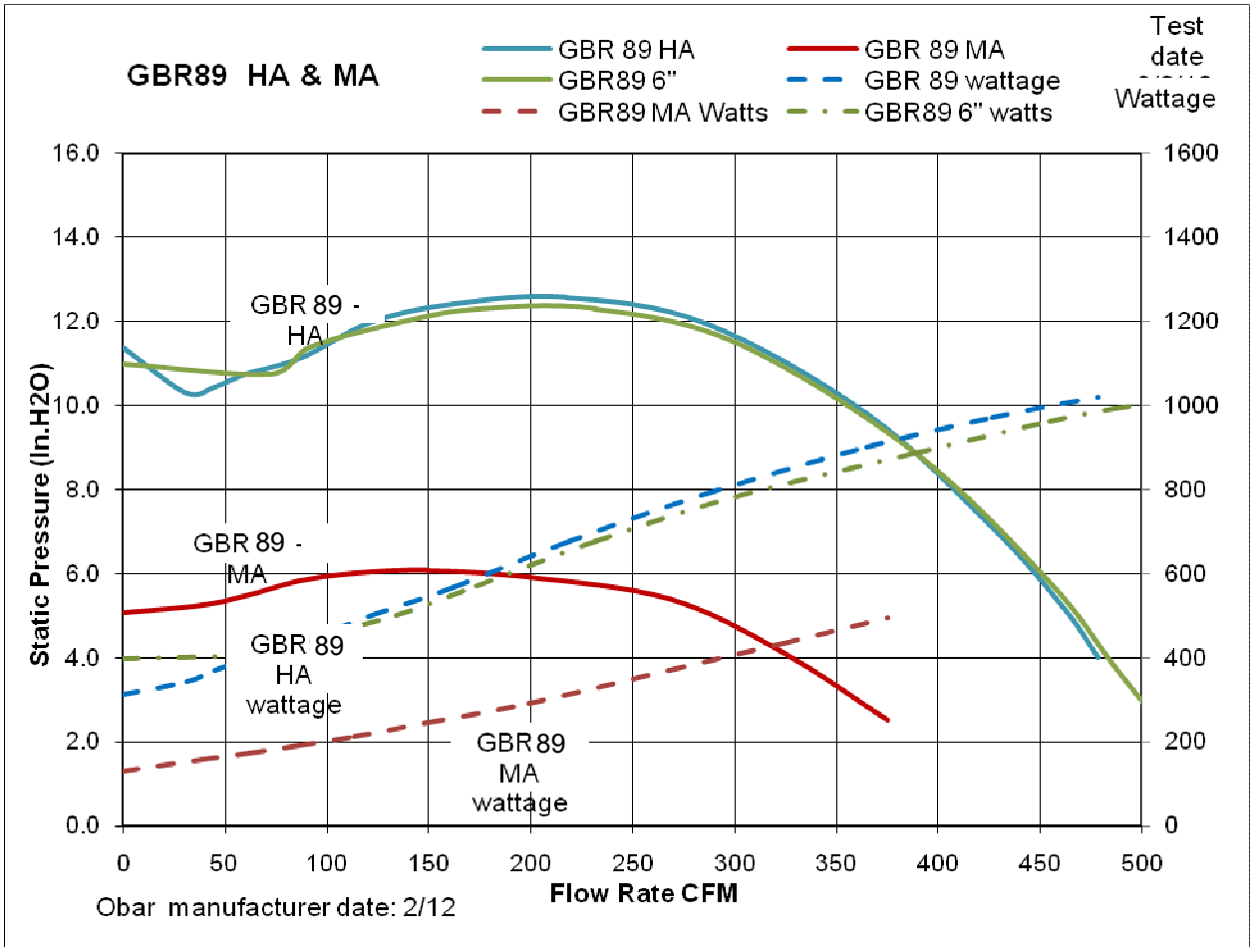
AMETEK TECHNICAL & INDUSTRIAL PRODUCTS
627 Lake Street, Kent OH 44240
USA: +1 215-256-6601 - Europe: +44 (0) 845 366 9664 - Asia: +86 21 5763 1258
www.ametektip.com

AMETEK
PRECISION MOTION CONTROL

GBR89 HA tested at full voltage with 8 feet of 4" inlet (Blue Lines) and 6" Inlet (Green lines)

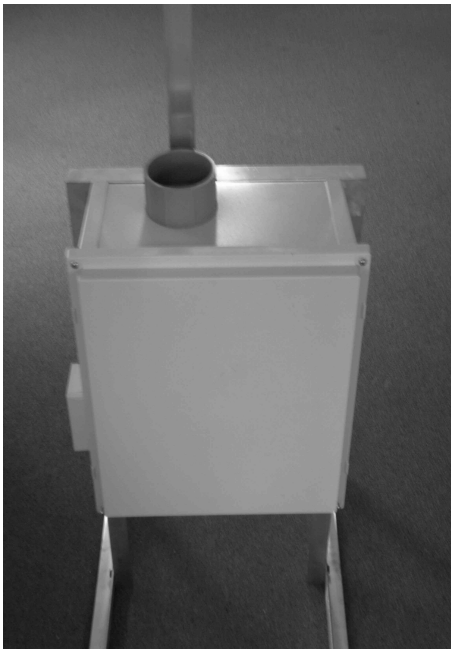
Maximum airflow with no exhaust piping and 8' of 6" piping is 529 CFM

GBR89 MA tested with speed control set to half the wattage consumption (Red Line)



THE OBAR GBR76
COMPACT RADIAL BLOWER

Based on 25 years of experience and 2 years of research and development, the patent pending GBR series of compact radial blowers provide the perfect combination of performance and design.



GBR76 WITH ROOF MOUNT

PERFORMANCE

- GBR76 SOE 16" WC @ 0 Max flow 155 cfm.
- GBR76 HO 41" WC @ 0 Max flow 160 cfm.
- Built in speed control to customize performance.
- Condensate bypass built in.
- 18 month warranty 40,000 hr sealed bearings.

DESIGN

- Our modular design means the blower and manifold assembly can be removed and replaced as a unit. This makes repairs cost effective and easy and allows contractors to upgrade systems simply by swapping assemblies.
- The GBR series is based on a bypass blower designed to handle combustible materials.
- The housing is not required to be air tight so you can add gauges and alarms without compromising the system.
- Built in condensate bypass.
- Built in speed control.
- Quick disconnect electrical harness.
- All UL listed components including UL listed enclosure for outside use.
- Wall fastening lugs included.
- GBR series roof and wall mounts available to quickly configure the blowers for your installation while providing a custom built look.
- Compact design 16"x 14"x 8" weighing only 18 lbs.

OBAR SYSTEMS INC 117 POCANTECS ROAD HIGHLAND LAKES NJ 07422 800 949 6227

GBR76 SOE	0”	2”	4”	6”	8”	10”	12”	16”	Wattage
SOE 16	150	140	129	118	105	90	75	35	150-320
SOE 12	125	115	100	83	62	39	0		110-200
SOE 8	105	90	70	42	0				60-120
SOE 4	75	50	0						37-50

GBR SOE performance using built in potentiometer set at sealed vacuums of 16, 12, 8, and 4” WC

GBR76 HO	0”	10”	20”	30”	40”	Wattage
HO 40	155	110	72	40	10	400-575
HO 30	150	108	70	22	0	375-415
HO 20	141	99	20	0		200-350

GBR76 HO performance using built in potentiometer set at sealed vacuums of 40, 30, and 20” WC

Blower Specifications

Notes:

- **Input Voltage Range:** 108-132 Volts AC RMS, 50/60 Hz, single phase.
- **Input Current:** 6 amps AC RMS
- **Operating Temperature (Ambient Air and Working Air):** 0°C to 50°C
- **Storage Temperature:** -40°C to 85°C
- **Dielectric Testing:** 1500 Volts AC RMS 60 Hz applied for one second between input pins and ground, 3mA leakage maximum.
- **Speed Control Methods:** PWM (Pulse Width Modulation) (1 kHz to 10 kHz)
  0 to 10 VDC speed control.
  Mechanical: A potentiometer is available for speed control of the blower. The potentiometer can be preset for a specific speed. Access for speed adjustment located in motor housing.
- **Approximate Weight:** 4.8 Lbs. / 2.2 Kg
- **Regulatory Agency Certification:** Underwriters Laboratories Inc. UL507 Recognized under File E94403 and compliant under the CE Low Voltage Directive 2006/95/EC.
- **Design Features:** Designed to provide variable airflow for low NOx & CO emission in high efficiency gas fired combustion systems. Built with non-sparking materials. Blower housing assembly constructed of die cast aluminum. Impeller constructed from hardened aluminum. Rubber isolation mounts built into blower construction to dampen vibration within the motor. Two piece blower housing assembly sealed with O-ring gasket for combustion applications. Customer is responsible to check for any leakage once the blower is installed into the final application.
- **Miscellaneous:** Blower inlet, discharge, and all motor cooling inlet and discharge vents must not be obstructed. Motor ventilation air to be free of oils and other foreign particles, (i.e. breathing quality air). Blower is to be mounted so ventilation air cannot be re-circulated.
  POWER CONNECTION: Blower connector, AMP Universal MATE-N-LOK, part no. 1-350943-0.
  SPEED CONNECTION: Blower connector, Molex Mini-Fit Jr., part no. 39-30-3056.
  Mating harnesses available upon request.

Enclosure Specifications

Rating:

Ingress Protection (EN 60529): 66/67

Electrical insulation: Totally insulated

Halogen free (DIN/VDE 0472, Part 815): yes

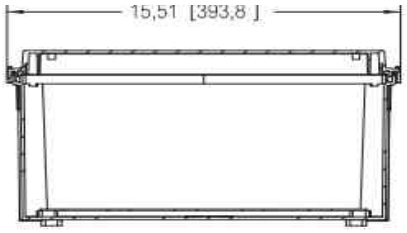
UV resistance: UL 508

Flammability Rating (UL 746 C 5): complies with UL 508

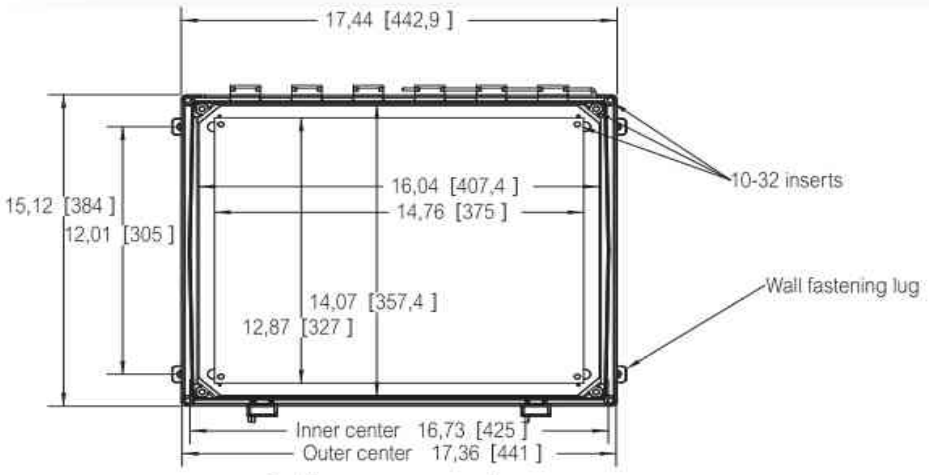
Glow Wire Test (IEC 695-2-1) °C: 960

NEMA Class: UL Type 4, 4X, 6, 6P, 12 and 13

Certificates: Underwriters Laboratories



Screw cover



Top View - cover removed

Flex-Tube® Manometer

Installation & Operating Instructions

1220/1230 Series
U-Tube and Well-Type Manometers

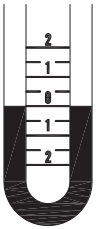


Fig. 1

With both ends of the tube open, the liquid is at the same height in each leg.

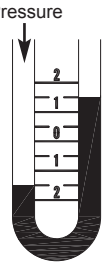


Fig. 2

The difference in height, "h", which is the sum of the readings above and below zero, indicates pressure.

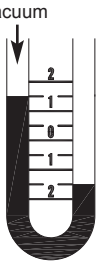


Fig. 3

The difference in height, "h", which is the sum of the readings above and below zero, indicates the amount of vacuum.

Measuring Pressure, Vacuum and Differential Pressure with Dwyer® Manometers
Dwyer manometers are available in two different styles. The W/M models use either water for readings in inches of water or mercury for readings in inches of mercury. The D models use Dwyer .826 specific gravity red gage fluid for readings in inches of water. The scales on the two styles have different lengths, so it is important to use the correct fluid.

Mounting Dwyer U-Tube Manometers
1221 - Mount to a vertical surface through holes in the scale.

1222 - Attach magnets to steel surface or remove magnets and mount through holes in scale.

1223 - Attach magnets to steel surface or through the hole in safety trap housing.

1227 - Because of angled connections, 1227 must be filled with indicating tube at an angle. After filling, check zero in vertical position. Clean all fluid from the exterior of the unit to prevent cracking of the backplate.

Note: Read vertical range on the right leg with the manometer vertical. Incline the manometer to zero for low range reading.

Mounting Dwyer Well Manometers
1230 - Mount to a vertical surface with flat-head screws through the holes in the scale.

1235 - Mount behind panel cutout to show only the tube and scale. Attach by drilling holes through the manometer's back-plate and panels. Make the panel cutout for the length and width of the tube and scale.

DWYER INSTRUMENTS, INC.
P.O. BOX 373 • MICHIGAN CITY, IN 46360, U.S.A.
Phone: 219/879-8000 www.dwyer-inst.com
Fax: 219/872-9057
e-mail: info@dwyer-inst.com

Filling U-Tube Manometers 1221 - 1222
Open both fittings to atmosphere. Slide scale to mid-point of travel. Add liquid to zero on scale. Clean all fluid from the exterior of the unit to prevent cracking of the backplate.

Filling 1223 - 1230 and 1235 Manometers
Remove large fitting from well using a 3/4″ open-end wrench. Also remove cork, disc, and O-ring. Be sure the other side is vented to atmosphere. Adjust zero to middle of travel. Add fluid to well up to the zero on scale. Replace cork, disc, and O-ring before replacing fitting. Clean all fluid from the exterior of the unit to prevent cracking of the backplate on 1223 models. To order red gage fluid, order part # A-101 (1 oz). To order fluorescein green color concentrate, order part # A-126 (1 oz).

Operation of 1221, 1222 and 1223 Manometers
Connect either side to pressure or vacuum, leaving the other side open to atmosphere. Add together the readings above and below zero.

It is normal for the two sides to have different readings and has no effect on accuracy. For differential pressure, connect both the high and low fittings. Add the readings above and below zero on the scale.

Operation of 1230 and1235 Manometers
Positive Pressure: Connect the well reservoir fitting to the pressure source, leaving the other side open to atmosphere.

Negative Pressure: Connect the top fitting to vacuum source, leaving well side open to atmosphere.

Differential Pressure: Connect higher pressure to well reservoir fitting and lower pressure to upper fitting.

Note: When finished, close fitting to prevent spilling or evaporation.

Maintenance
With proper care, Dwyer Flex-Tube® Manometers will continue to give accurate readings. If cleaning is needed, remove fittings, drain fluid, and rinse with mild soap and water. A cleaning brush (part #A-366) may be used to remove oxidation.

Avoid harsh soaps and solvents which may damage manometer and void warranty.

When replacing O-rings, apply a thin coat of petroleum jelly to assure a good seal. Do not coat O-ring used in the overpressure safety trap.

Avoid using fluids other than those specified. Corrosive fluids may damage the manometer.

If return is needed contact customer service to receive a return goods authorization number before shipping.

Printed in U.S.A. 5/13 FR# 44-440475-00 Rev. 7

DWYER INSTRUMENTS, INC.
P.O. BOX 373 • MICHIGAN CITY, IN 46360, U.S.A.
Phone: 219/879-8000 www.dwyer-inst.com
Fax: 219/872-9057
e-mail: info@dwyer-inst.com

SERIES 605 | MAGNEHELIC® DIFFERENTIAL PRESSURE INDICATING TRANSMITTER

FEATURES/BENEFITS

- **Easy to read gage permits viewing from far away**
- **Patented design provides quick response to pressure changes means no delay in signaling and alerting to critical situations**
- **Durable and rugged housing and high-quality components combined provides long service life and minimized down time**
- **4-20 mA output allows for integration into Building Automation Systems**
- **Optional stainless steel bezel is the same installation diameter as Magnehelic® Gage and simplifies field upgrade to 605 indicating transmitter**

Note: Shown with optional -SS bezel. Backward compatible with Magnehelic® Gage.

APPLICATIONS

- Monitor pressures in ducts, rooms, or total building pressures
- Filter monitoring
- Local indication of clean room pressures with process signal sent to control room

DESCRIPTION

The **SERIES 605** Magnehelic® Indicating Transmitter provides for both visual monitoring and electronic control of very low differential pressure. The Series 605 is ideal for control applications in building HVAC systems where local indication is desired during routine maintenance checks or necessary when trouble shooting the system. The easily read dial gage is complimented by the two-wire, 4-20 mA control signal utilizing the time-proven Dwyer® Magnehelic® Gage mechanical design and Series 600 transmitter technology. The two-wire design with terminal strip on the rear simplifies connection in any 4-20 mA control loop powered by a 10-35 VDC supply.

GAGE SPECIFICATIONS

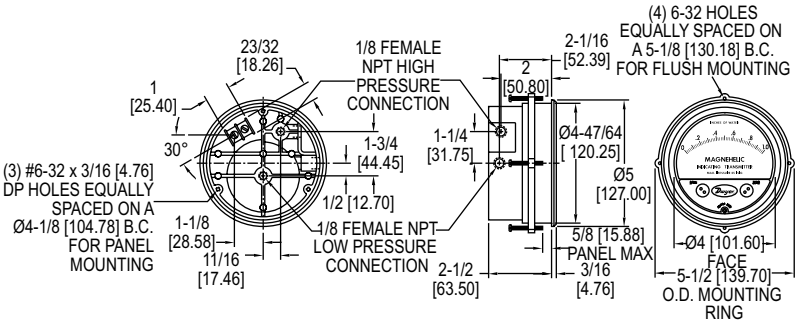
Service	Air and non-combustible, compatible gases.
Wetted Materials	Consult factory.
Accuracy	See ordering page.
Stability	±1% FS/yr.
Pressure Limits	See ordering page.
Temperature Limits	20 to 120°F (-6.67 to 48.9°C).
Process Connections	1/8″ female NPT.
Size	4″ (101.6 mm) dial face, 5″ (127 mm) OD x 2-11/16″ (68.3 mm). For -SS Bezel 4-3/4″ OD (120.7 mm) x 2-21/32″ (67.5 mm).
Weight	1 lb, 12.6 oz (811 g).
Agency Approvals	CE.

TRANSMITTER SPECIFICATIONS

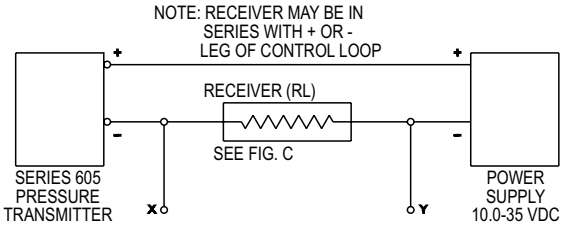
Accuracy	See ordering page (includes linearity, hysteresis, and repeatability).
Temperature Limits	20 to 120°F (-6.67 to 48.9°C).
Compensated Temperature Range	32 to 120°F (0 to 48.9°C).
Thermal Effect	±0.025% FS/°F (0.045% FS/°C).
Power Requirements	10 to 35 VDC (2-wire).
Output Signal	4 to 20 mA.
Zero and Span Adjustments	Protected potentiometers.
Loop Resistance	DC: 0 to 1250 Ω maximum.
Current Consumption	DC: 38 mA maximum.
Electrical Connections	Screw terminal block.
Mounting Orientation	Diaphragm in vertical position. Consult factory for other position orientations.

DWYER INSTRUMENTS, INC.
T: 219-879-8000 | F: 219-872-9057 | info@dwyermail.com
800-872-9141

DIMENSIONS



WIRING DIAGRAM



HOW TO ORDER

Use the **bold** characters from the chart below to construct a product code.

605 **-X** **-X**

SERIES

605 - Differential pressure indicating transmitter

VARIANT 1

00N – 0.05 to 0 to 0.20 in w.c.
0 - 0.05 to 0.50 in w.c.
1 - 0.05 to 1.0 in w.c.
2 – 0.05 to 2.0 in w.c.
3 - 0.05 to 3.0 in w.c.
6 - 0.05 to 6.0 in w.c.
10 - 0.05 to 10.0 in w.c.
11 - 0.25 to 0 to 0.25 in w.c.
12 - 60 to 0 to 60 Pa
20 - 0.05 to 20.0 in w.c.
30 - 0.05 to 30.0 in w.c.
50 - 0.05 to 50.0 in w.c.
60PA – 0 to 60 Pa
125PA – 0 to 125 Pa
250PA – 0 to 250 Pa
500PA – 0 to 500 Pa
1KPA – 0 to 1kPa
1.5KPA – 0 to 1.5kPa

OPTIONS

AT - Aluminum tag
G - Green scale overlay
HC - Horizontal calibration (90 deg face up)
M - Mirror scale overlay
NIST - NIST traceable calibration certificate
R - Red scale overlay
SS - Brushed 304 stainless steel bezel
ST - Stainless steel tag
TA - Tilt angle from vertical in degrees (-90 to 90)
WP - Weather proof enclosure
Y - Yellow scale overlay

ACCESSORIES

Model	Description
A-298	Flat aluminum bracket for flush mounting Photohelic® & Capsuhelic® gages, 603A, 605, and 3000MR
A-370	Flush mount bracket used with: Photohelic® 3000MR/MRS, Capsuhelic®, 631B Transmitter, EDA. Bracket is then surface mounted. Steel with gray hammertone epoxy finish
A-320-B	Enclosure for 3000MR/MRS Photohelic® Switch/Gage, 605 Magnehelic® DP Transmitter, DH3 Digihelic® Pressure Controller, 2000 Magnehelic® Gage with medium and high pressure options, 4-13/16″ (122.24 mm)
A-489	4″ 303 SS straight static pressure tip with flange

dwyer-inst.com

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APPENDIX B

WARNING DEVICE PRODUCT INFORMATION

SENSAPHONE®
REMOTE MONITORING SOLUTIONS

Sensaphone CELL682

Remote Monitoring via Cellular

ASSURANCE

COUNTLESS INDUSTRIES DEPEND ON SENSAPHONE FOR THE MOST COMPREHENSIVE REMOTE MONITORING SOLUTIONS AVAILABLE. WHEN YOU NEED TO BE ABSOLUTELY SURE A REMOTE SITE IS STABLE, SECURE AND MONITORED AROUND THE CLOCK, THERE'S NO SUBSTITUTE FOR CERTAINTY.

Easy to use – everyday

The Sensaphone CELL682 is easy to use – everyday. And we offer free tech support to walk you setup or any problems you may encounter.

We've got a sensor for that

Sensaphone has a sensor for monitoring everything from environmental conditions to security and more.

Your business is our business

With over 400,000 systems installed worldwide, we've put Sensaphone to the test in just about every application imaginable.

Suggested Applications

Agriculture
Know that the temperature, humidity, or other critical conditions where plants or animals live are in check while you're away.

Water & Wastewater
Use your Sensaphone CELL682 to monitor pumps, power failure and other conditions in water and wastewater applications.

Oil & Gas
Don't find out about equipment failure until the morning. The Sensaphone CELL682 will call or e-mail as soon as an alarm condition exists.

Sensaphone CELL682

Features and Specifications

Cellular

Use the CELL682 in locations where a traditional land line is not available. Receive alarms via a phone call, text, or e-mail.

LEDs

LED lights give a quick visual status. Know everything is okay by simply looking at the CELL682.

Power

Comes with a plug in power supply that also monitors for power failures.

Battery Backup

Rest easy knowing that even if the power goes out, the CELL682 will keep monitoring.

Output

Connect to an output such as a light or horn to alert anyone nearby there's a problem.

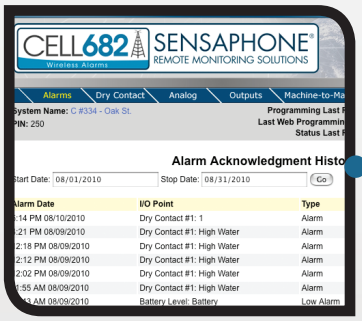
Inputs

Accept fourteen different inputs – a wide range of sensors are available.

Contact Series | 2.8K Series | 10K Series | 4-20mA Series

Enclosure

The CELL682 comes sealed in a NEXA 4X enclosure which allows it to be placed in less than ideal environments.



Web Services

Program, adjust and monitor the status of the sensors on a webpage the CELL682 creates.

Popular Compatible Sensors & Accessories

2.8K Room Temperature Sensor	FGD-0100
2.8K Weatherproof Temperature Sensor	FGD-0101
2.8K Temperature Sensor in Glass Bead Vial	FGD-0107
Temp Alert Temperature Switch	FGD-0022
Humidistat Humidity Switch	FGD-0027
PowerOut Alert Power Failure Switch	FGD-0054
Magnetic Reed Door and Window Switch	FGD-0006
Zone Water Detection Sensor	FGD-0056
Additional 10' of Water Rope	FGD-0063
Infrared Motion Detection Sensor	FGD-0007
Float Switch	FGD-0222

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