

Matthew M. Carroll, PE
1085 Sackett Avenue, Bronx, NY 10461

February 12, 2026

Attn: Daniel Nierenberg, PG, Project Manager
Division of Environmental Remediation
New York State Department of Environmental Conservation
625 Broadway, 12th Floor
Albany, NY 12233

Re: Sub-Slab Depressurization System (SSDS) Remedial Design Document
Basement SSDSs (S1 through S3) and At-Grade Communication Test
127 12th Street – Brooklyn, NY
Block 1020, Lot 52
BCP Site No. C224411

Dear Mr. Nierenberg:

In accordance with the approved July 2025 Interim Remedial Measures (IRM) Work Plan (WP) prepared by Matthew M. Carroll, PE for the above referenced property [herein referred to as the “Site”], the proposed interim remedy included the design of an active sub-slab depressurization system (SSDS) to be installed within the existing Site building, as well as the installation and operation of the SSDS under a Remedial Design Document. Implementation of the on-site active SSDS would serve as a permanent engineering control to address and mitigate the potential for soil vapor intrusion into the existing onsite building from any contaminated soil or groundwater.

This Remedial Design Document includes the installation of three SSDSs (identified as systems S1 through S3) in the basement of the Site building and a communication test in the at-grade portion of the building.

Following implementation of a communication test as described below, it was determined that three separate SSDSs would be optimal in the basement to meet the remedial goals for the Site. This Remedial Design Document has been prepared to present the proposed design and layout of the onsite active SSDSs in the basement for formal approval from the New York State Department of Conservation (NYSDEC), in coordination with the New York State Department of Health (NYSDOH). In addition, communication testing will be completed in the at-grade portion of the building with a future Remedial Design Document provided to detail the system or systems proposed for the at-grade portion of the building.

The proposed interim remedy at the Site includes the operation of the active SSDSs as a permanent engineering control to prevent soil vapor intrusion into the basement of the existing onsite building.

Background

The Site is currently improved with a two-story masonry building with a basement. The basement level of the building does not extend fully to the western Site boundary, while the upper levels of the building fully extend to the western Site boundary. The Site is currently used for metal finishing, predominantly through spray booth painting and lacquering. Prior uses include a carpentry shop, metal manufacturer, and laundry.

As documented in the July 2025 IRM WP, based on the results of combined Phase II Investigations conducted in 2023 and 2024, the contaminants of concern at the Site are cVOCs, specifically tetrachloroethene (PCE) and its breakdown products. Other contaminants detected are the petroleum VOC 1,2,4,5-tetramethylbenzene, historic-fill related polyaromatic hydrocarbons (PAHs) and arsenic. In general, the highest concentrations of cVOCs in soil were detected in shallow soils located below the onsite building's basement in the northern portion of the Site. CVOCs, PAHs, and dissolved earth metals were detected in groundwater across the Site. 1,2,4,5-tetramethylbenzene was detected in one groundwater sample collected from the northwestern corner of the Site building. In general, the highest concentrations of cVOCs detected in soil vapor were found in samples collected from the southern portion of the Site basement.

Laboratory analysis of soil vapor and indoor air samples collected during the combined 2023 and 2024 Phase II Investigations indicated elevated concentrations of cVOCs, specifically PCE and its breakdown products, in sub-slab soil vapor and indoor air across the Site. PCE was detected at a max. concentration of 16,100 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$) in sub-slab soil vapor and at a concentration of 1,270 $\mu\text{g}/\text{m}^3$ in indoor air; trichloroethene (TCE) was detected at a max. concentration of 537 $\mu\text{g}/\text{m}^3$ in sub-slab soil vapor and at a concentration of 4.82 $\mu\text{g}/\text{m}^3$ in indoor air; cis-1,2-dichloroethene (cis-1,2-DCE) was detected at a max. concentration of 377 $\mu\text{g}/\text{m}^3$ in sub-slab soil vapor and at a concentration of 0.349 $\mu\text{g}/\text{m}^3$ in indoor air; and, methylene chloride was detected at a max. concentration of 23 $\mu\text{g}/\text{m}^3$ in sub-slab soil vapor and at a concentration of 21.4 $\mu\text{g}/\text{m}^3$ in indoor air. Of these, PCE and TCE were detected in the indoor air sample in exceedance of the NSYDOH Air Guideline Values (AGVs) of 30 $\mu\text{g}/\text{m}^3$ and 2 $\mu\text{g}/\text{m}^3$, respectively. The concentrations of PCE, TCE, cis-1,2-DCE, and methylene chloride in sub-slab soil vapor and indoor air result in a "Mitigate" Matrix Decision when compared to the applicable NYSDOH Soil Vapor Intrusion (SVI) Decision Matrices.

Communication Test

A communication test was performed at the Site by Matthew M. Carroll, PE, and Obar Systems, Inc. (Obar) on August 7, 2025. The communication test was performed to ensure that the SSDS will create sufficient vacuum everywhere beneath the building slab. The test was performed by installing extraction points throughout the floor slab at four locations (three locations in the basement and one location on the first floor) within the onsite building. At the first location in the basement, two approaches were tested. Initially, the test was completed by coring a 2.5-inch diameter suction hole in the concrete slab and setting the test head directly into the slab. This was compared to a suction pit approach, which was an approximately 18" x 18" pit with the underlying soil removed to a depth of approximately 24 inches. Based on the results of both suction point methods at the first testing location, there was little to no difference in the radius of influence (ROI) but the pit approach required greater air flow to achieve the same applied pressure; therefore, at all other test locations, the suction points were installed utilizing the coring method.

Following suction point installation at each testing location, static vacuum was measured by applying known quantities of vacuum to the test suction points. A specialized Sub-Slab Diagnostic Vacuum (SSDV), capable of up to 120 cubic feet per minute (cfm) and a vacuum of 50 inches of water column (in-wc) was used with a variable speed controller to define the flow and vacuum characteristics of the soil beneath the slab. The range of applied vacuum and flow rate used for each suction point was determined by evaluating the baseline data taken in the maximum flow and vacuum test performed at the beginning of each sampling series.

Test holes 5/16-inch in diameter were drilled at various distances extending radially outward from the test suction points and a manometer was utilized to measure the pressure differential. The number of test point locations at each suction point was determined based on the results of the first sampling series at that location (i.e., a series of points were installed at the maximum flow rate until diminishing readings were noted.) In most instances, this was a reading of 0.01 in-wc or lower. In addition, no testing was completed beyond 30 feet from the suction point. The only exceptions were as follows:

- within the center of the basement (S2), toward the back of the building, a test point location was not drilled at 30 feet based on the presence of stored materials and the wall itself. The reading at 25 feet was greater than the 0.01 in-wc screening level. The design ROI in this area is 20 feet;
- within the western portion of the basement (S3), nearest the at-grade portion of the building, test point locations could not be installed up to 30 feet away in two locations due to the presence of stored material, and to the west, the presence of the basement wall. The design ROI in this area is 20 feet; and,
- also within the western portion of the building, an additional point was tested at 30 feet to the south despite the reading at 25 feet being 0.008 in-wc, below the 0.01 in-wc screening level. As noted above, the design ROI in this area is 20 feet.

In addition, test points T-8, T-21 and T-41 were installed to test whether there was communication below an existing wall in the basement.

The number of suction points was determined based on the total required to fully define the sub slab permeability in each isolated slab area. The data collected at each suction point includes: maximum applied vacuum and airflow at the suction point, vacuum one foot away from the suction point, vacuum at each test point at multiple vacuum speeds or flow rates, and the distance each test point is from the suction point. Measuring pressure differentials one foot from the applied vacuum source helped to determine the loss per foot function as a result of the soil permeability. Applied vacuum rates were regulated using a dilution valve. Field monitoring was conducted during testing to determine if short circuiting was occurring at any suction points. This included observing the slab in tested areas for cracks or holes that would likely create a short-circuiting condition (i.e., large holes or cracks through which the soil below could be observed). In addition, the collected readings did not show anomalies that would indicate short circuiting, for instance an anomalous background reading (i.e., no response) in a test point that is close to the extraction point or near a crack. The pressure readings were also collected in four directions, which showed consistent readings (i.e., there was no direction without a response). The communication test equipment was equipped with a vapor phase carbon filter and photoionization detector (PID) was utilized during the communication test to monitor the effluent stream for VOCs. PID readings collected from the effluent stream at each tested location (basement and at-grade portions of the building and all readings were 0.0 parts per million (ppm). Please note that while the at-grade portion will be retested, it is referenced here to document the field activities. PID readings were also collected from test point locations following testing and are included in Attachment 2. Following the tests, the suction points and smaller test points were removed, and the slab was repaired with concrete.

Following completion of the communication test, the SSDS suction point ROI was estimated by examining the vacuum data measured during the diagnostic survey at nearby test points. The

required system operating vacuums were determined using values measured at the diagnostic head and the suction points, along with performance tables for the SSDV.

The basement area was divided into three sections, as further described in the deviations section.

System 1 (S1) met the design criteria of -0.02 in-wc with 6 in-wc of applied vacuum at 20 feet in three directions (TP-4, TP-12 and TP-18); the last direction (toward the center of the building, TP-8) showed there was diminished response across the structural wall.

System 2 (S2) met the design criteria with 20 in-wc of applied vacuum at 20 feet in three directions (TP-25, TP-30 and TP-35). Again, in the last direction (toward S1), the farthest location, TP-41 at 24.5 feet, showed diminished response across the same structural wall. There was a doorway in this area and the testing showed there was no communication in this area. A 20 foot test in this last direction was not possible due to the configuration of the building (the structural wall) and stored materials. At 15 feet (TP-40), the response was -0.065 in-wc, well above the design criteria and similar to and greater than two 15 foot readings in other directions that met the design criteria at 20 feet.

System 3 met the design criteria with 1.5 in-wc of applied vacuum at 20 feet in one direction (TP-53). In a second direction, TP-46, the reading was just slightly below the design criteria (reading of -0.018 in-wc). In a third direction, the testing was limited by the configuration of the building (the cellar wall) and the farther possible test in this direction (TP-57) had a response of -0.070 in-wc, well above the design criteria. Lastly, toward the center of the building, only one test was possible due to storage of material; at five feet, the response was -0.089 in-wc.

Based on the above readings, a 20 foot ROI has been incorporated into the design in the basement.

The results of the communication test are documented in a Diagnostic Report and Vapor Intrusion Mitigation System Design Plan dated October 24, 2025, and prepared by Obar. The Diagnostic Report and Vapor Intrusion Mitigation System Design Plan is included in Attachment 1. A layout of the communication test suction points and test points is included as drawing SSD#1 of the report. The generalized mapped ROIs across the Site building are depicted on drawing SSD#2 of the report.

System Design and Installation

Three active SSDSs will be retrofitted into the existing Site building basement. The active SSDSs will maintain a negative pressure by inducing vacuum underneath the basement slab and allow subsurface vapors to vent above the Site building roof without entering the building.

The active SSDSs have been designed in general conformance with the NYSDOH *Final Guidance for Evaluating Soil Vapor in the State of New York* (2006) with updates (SVI Guidance). Systems 1 through 3 will service the basement areas (System 1 will service the eastern portion of the basement, System 2 will service the center of the basement and System 3 will service the western portion of the basement). The SSDSs consist of a total of 23 suction points installed throughout the existing Site building's slabs: eight suction points will be installed in the eastern portion of the basement slab for System 1; eight suction points will be installed in the central portion of the basement slab for System 2; and, seven suction points will be installed in

the western portion of the basement slab for System 3. All three systems will connect to a roof-mounted blower (one blower per system, for a total of three roof-mounted blowers) via cast iron piping through the building interior directly to the roof.

The major components of the three SSDSs include:

- 23 suction points installed throughout the Site building's slab: eight suction points will be installed in the eastern portion of the basement slab for System 1; eight suction points will be installed in the center of the basement for System 2; and, seven suction points will be installed in the western portion of the basement slab for System 3;
- Three-inch and four-inch cast iron (interior) piping;
- 23 ball valves affixed to the three-inch cast iron piping extending from each extraction point;
- Three mini digital differential pressure gauges and alarms (Obar Systems, Inc. Model No. GBR 25T);
- Three exterior, roof-mounted radial blowers (Obar Systems, Inc. Model No. GBR89); and,
- Eleven pressure monitoring points in the basement slab.

The concrete slab areas removed during the geotechnical investigation will be restored and sealed so that they do not have the potential to serve as preferential pathways for vapor intrusion or to shortcircuit applied vacuum during SSDS operations. Each suction point will be installed by coring a 3.5 inch hole through the slab and hand excavating approximately 0.5 cubic foot of sub-slab material to a depth of approximately six inches below the slab. The suction points will be backfilled with clean crushed stone and sealed upon completion. At each suction point location, a cast iron pipe (three-inch nominal size) will be installed and sealed directly into the suction holes. The slab penetration points will be sealed with a chemically resistant sealant (e.g., bituthene liquid membrane). Each suction point will have a ball valve for balancing system airflow.

All system piping and fittings within the building will be three-inch and four-inch cast iron. Overhead piping will be installed as high as possible within the building and without the possibility of water traps. All overhead piping will have a minimum slope of one-inch vertical per eight feet of horizontal pipe (i.e., a 1% slope) in accordance with Section 512.3 of the New York City Department of Buildings (NYC DOB) 2022 Mechanical Code to drain condensation. The vertical riser pipes connected to each suction point will connect to the overhead piping. The vertical riser pipes will be secured to walls or columns and concreted into the slab. All pipes will be supported according to local code requirements. Overhead pipes will be secured with threaded rod, beam clamps, Sammys anchors, and swivel loop hangers. Vertical pipes will be secured to the walls or columns with strut and galvanized Unistrut pipe straps. Test ports will be installed in each of three riser pipes for vacuum and airflow sampling. Riser test ports will consist of a ½-inch well nut with a brass insert and stainless steel hex bolt.

The risers for each system will be connected to blower fans for exhaust into the atmosphere. Cast iron will be utilized due to FDNY requirements for interior piping. Eleven pressure monitoring points will be installed throughout the basement slabs to confirm the system is achieving its design goals.

The selected blower, manufactured by Obar Systems, Inc. (Model No. GBR89 for Systems 1 through 3), will be mounted on the roof in weather-proof enclosures. The proposed exhaust pipe

locations will meet the requirements of the NYSDOH *Soil Vapor Intrusion Guidance*, specifically *Section 4.2.2, System-specific recommendations*, which reads:

To avoid entry of extracted subsurface vapors into the building, vent pipe's exhaust should be:

- i. Above the eave of the roof (preferably above the highest eave of the building at least 12 inches above the surface of the roof),
- ii. At least 10 feet above ground level,
- iii. At least 10 feet away from any opening that is less than 2 feet below the exhaust point, and
- iv. 10 feet from any adjoining or adjacent building, or HVAC intakes or supply registers.

A mini digital differential pressure gauge that measures vacuum in the risers and alarm systems will be installed with each of the three systems that will notify the building management if a drop in pressure occurs, which indicates that the system is offline or not operating as designed. Ball valves will be installed on each three-inch cast iron riser pipe extending from each suction point to facilitate system balancing or isolated shutoffs, as necessary. Eleven pressure monitoring points will be installed throughout the building's basement slab to monitor and confirm the system is achieving its design goal for a minimum of -0.02 in-wc of induced subsurface vacuum.

A vapor treatment system will be installed with each of the three systems to treat the blower effluent prior to exhausting into the atmosphere. The vapor treatment system will consist of a 55-gallon vapor phase carbon drum filled with virgin coconut husk carbon, for each system, that will require routine carbon change outs for each SSDS. The effluent concentrations were estimated using proposed SSDS design flow rates and sub-slab soil vapor analytical results collected during the May 2023 Phase II Site Investigation, specifically analytical results with the highest reported concentrations of cVOCs (SV-2 in the basement). Conservatively, given that the tested conditions represent trapped vapors and not the average annual effluent concentrations, the results were compared to the NYCRR Part 212-2.2 Table 2 – High Toxicity Air Contaminant (HTAC) mass emissions limits as shown on Table 1; all compounds are below these levels indicating that treatment is not required. However, the NYSDEC and NYSDOH are requiring treatment, at this time, due to the proximity of sensitive receptors. Each drum contains 150 pounds of carbon; at a conservative adsorption rate of 100 milligram of VOCs per 1 gram of carbon (i.e., 10%), the drums are sufficient for a minimum of 2.25 months. Additional effluent sampling is required and these calculations and estimates will be updated based on those readings. The drums will be installed within the Site building on pallets to facilitate servicing and water drainage. The vapor treatment systems will be installed prior to start-up of the systems and will be utilized during each system start-up and initial system operation. Effluent vapor sampling will be conducted upon start-up as described below to confirm the vapor treatment systems are meeting design goals. The vapor treatment systems will not be removed without written confirmation from NYSDEC/NYSDOH. The exhaust location, labeling, alarms, and system components have been designed in general accordance with the NYSDOH Soil Vapor Guidance.

The proposed SSDS layouts and details are included in Attachment 3. Specification sheets for the SSDS components are included in Attachment 4.

System Start-up and Inspection

Following installation of the active SSDSs in the basement, the following actions will be completed during system start-up to ensure that the systems achieve the design goal of a -0.02 in-wc or greater pressure differential:

- The blowers will be turned on;
- All exposed/visible piping will be checked for evidence of damage, cracks or leaks;
- After allowing for the blower and system to equilibrate, sub-slab vacuum will be measured at eleven vapor monitoring points to ensure that the goal of -0.02 in-wc has been achieved. Equilibrium will be met when the flow rate and vacuum measured in the riser and pressure monitoring points do not change more than 5% over three consecutive 15-minute readings. While not required for equilibrium testing, PID readings will be collected and recorded along with the vacuum readings; and,
- Verification that the system alarms are functioning will be completed by disconnecting the pressure tubing hookups and noting that all alarms are operational.

Cracks, perforations and areas of deteriorated concrete slab will be evaluated for potential short-circuiting as part of initial system start-up activities. Evaluations of the slab will include the use of smoke tubes (or approved equivalent), PID screening (with equipment capable of reading parts per billion), and photo-documentation. Any areas with identified penetrations that can serve as preferential pathways for vapor intrusion (cracks, floor drains, utility perforations, sumps, etc.) will be appropriately addressed as part of initial system start-up activities.

Contingency

In the event the SSDSs do not function as anticipated, NYSDEC and the NYSDOH will be notified no later than 24 hours after the determination.

The configuration of the basement is such that additional suction points can be added using the same design and, potentially, the same radial blower. The proposed pressure monitoring points are placed to evaluate whether additional suction points are required to meet the design criteria.

The following will be provided to NYSDEC/NYSDOH:

- the results of the readings (PID and vacuum) from all pressure monitoring points, risers and fans;
- a proposal for additional communication testing (inducing flow and testing the response), if needed, and diagnostic testing (testing the pressure in different locations to confirm the ROI so that additional risers can be added) with a proposed layout. Communication testing would be proposed if any non-depressurized areas are suspected to be due to barriers to sub-grade flow. The diagnostic testing will be completed, at a minimum, between the suction point and the pressure monitoring point(s) that does not meet the design goal;
- a revised, proposed layout of suction points and/or other proposed modifications. The layout will be based on the communication testing and/or diagnostic testing;
- an analysis of whether the installed blower and other components (e.g., alarms and gauges) are sufficient for the new design.

If additional suction points are not sufficient, the Remedial Engineer will consider other contingencies, such as utilizing larger equipment or splitting the area up into separate systems.

Effluent Vapor Sampling

During initial start-up of the SSDSs, one effluent vapor sample will be collected from each SSDS system in laboratory-supplied 5-liter Tedlar bags. Effluent vapor samples will be collected as grab samples from each SSDS system before and after it has gone through the vapor treatment system described above. The samples will be sealed, labeled and placed in a secure container for delivery to a NYSDOH ELAP-certified analytical laboratory. The effluent vapor samples will be analyzed for EPA Method TO-15 VOCs, including naphthalene. The flow in the risers will also be measured so that the effluent conditions can be evaluated for additional treatment, if necessary, under the NYSDEC DAR Policy DAR-1: Guidelines for Evaluation and Control of Ambient Air Contaminants under 6 NYCRR Part 212, February 2021.

Baseline and Post-Mitigation Indoor Air Sampling

Efficacy of the active SSDSs will be confirmed via pressure monitoring points achieving the required -0.02 in-wc depressurization throughout the sub-slab. Baseline indoor air sampling will be conducted within the basement of the onsite building prior to start-up of the active SSDSs. Post-mitigation indoor air sampling will be conducted approximately 30 days following SSDS start-up for additional evaluation of the SSDSs and will be repeated if start-up and the subsequent 30-days period falls outside of the heating season. It is anticipated that a total of three indoor air samples will be collected from the Site building's basement during each sampling event. For each indoor air sampling event, one ambient (background) air sample will also be collected outside of the onsite building in the upgradient wind direction.

Reporting

An Interim Site Management Plan (ISMP) will be prepared that includes an Operations, Maintenance, and Monitoring (OM&M) Plan and submitted to NYSDEC upon completion of the Interim Remedial Measures. The OM&M Plan will describe the operation and maintenance procedures to be conducted during the lifetime of the SSDSs. Baseline and post-remedial indoor air sampling will be completed in accordance with the approved IRM WP, which will be incorporated into the ISMP and documented with the submission of the Construction Completion Report (CCR).

Laboratory reports will include ASP Category B data deliverables for use in the preparation of data usability summary reports (DUSRs). All results will be provided in accordance with the NYSDEC Environmental Information Management System (EIMS) electronic data deliverable (EDD) format.

All performance monitoring and/or final post-remedial sampling analysis will be included in the CCR.

Additional Communication Test for At-Grade Portion of the Site Building

The at-grade portion of the building was tested but did not meet the design criteria of -0.02 in-wc. Based on observations of a gap below the slab and the presence of gravel, this area will require a high flow rate to achieve the design criteria. A communication test using a different fan, which can induce higher flow rates, will be completed.

Prior to the installation of the SSDS in this area, a communication test will be performed to ensure that the system will create sufficient vacuum everywhere beneath the at-grade slab. Test suction points will be installed through the floor slab in multiple locations within the on-Site building. The proposed locations are those that would be used if the testing supports a 15-foot ROI.

To create the test suction points, the existing slab will be cored with a 2.5-inch diameter bit and setting the test head directly in the slab. The static vacuum will first be measured by applying known quantities of vacuum to the test suction points. Smaller test points will be drilled at select distances from the test suction points and a manometer will be utilized to measure the pressure differential. The data from the communication test and the measured volume of the exhaust system will be used to determine the number of suction points and the types and capacities of suction blowers required for the SSDS.

Incremental vacuum rates will be applied to each extraction well until the field readings stabilize (less than 10% change over a five minute duration), as determined by field readings. Applied vacuum rates will be regulated through the use of a dilution valve. During testing, if short circuiting is encountered at an extraction well, or in the SSDS testing area, provisions will be made to seal any cracks in the existing concrete slab. Field monitoring during testing will ensure that no short circuiting will occur.

Several ½” temporary vacuum monitoring points will be drilled through the existing concrete floor slab at various locations extending radially outward from the test well at 5-foot increments. Testing will continue until the reading is 0.01 in-wc or lower or 30 feet from the suction point. These test points will be used during the test to collect vacuum influence readings as the test progresses.

The testing equipment will consist of the following equipment:

- Regenerative Vacuum Blower (Max Flow 550 cfm, Max vacuum 14.5” H₂O).
- Digital Manometer
- Digital Air Flow Meter
- Photo-Ionization Detector (PID)

During pilot testing, the effluent stream will be monitored for VOCs using a PID, and the air flow rate will be measured. Following the tests, the suction points will be removed and concrete will be used to match the existing concrete thickness and fill in the test ports.

The pilot test data sheets and a figure showing the locations of the pilot test extraction wells and monitoring points will be provided with final design layout. The communication test will be conducted upon approval of this Remedial Design Document and a design document will be

submitted to NYSDEC for approval prior to the installation of the at-grade SSDS. The design and layout of the proposed communication test is depicted on the attached Figure 1.

Deviations from the Interim Remedial Measures Work Plan

The following is a list of deviations from the IRM WP and an explanation for each deviation:

1. The NYSDEC-approved IRM WP indicated that, at two locations, a test suction point for the communication test would be installed by saw cutting the slab and removing the underlying soil to a depth of at least 18 inches. The void space would then be lined with geotextile fabric and a layer of ¾-inch clean stone aggregate (or similar material). During implementation of the communication test, initially, a suction point was installed at the first testing location by coring a 2.5-inch diameter suction hole in the concrete slab and setting the test head directly into the slab. After running the initial test, one 18" x 18" pit was saw cut in the slab at the first testing location and the underlying soil removed to a depth of 24 inches, in compliance with the IRM WP. Based on the results of two suction point methods at the first testing location, there was little to no difference in the ROI between the two methods; therefore, at all other test locations, the suction points were installed utilizing the coring method. Based on the results of the communication test, the suction points installed via coring are a viable alternative to the suction pit approach detailed in the IRM WP and will also be effective at achieving the design goals for the SSDS.
2. The NYSDEC-approved IRM WP indicated that all permanent suction points for the final SSDS design would be designed and installed utilizing the same methodology used to install the temporary suction points for the communication test. As noted above, the installation methodology for the suction points was adjusted in the field during the communication test to install the points via coring of the concrete slab instead of saw cutting and removing the slab and underlying soil to a minimum depth of 18 inches. Since the coring method was utilized for suction point installation during the implementation of the communication test, the coring method will also be utilized for installation of the permanent suction points for the SSDS. Based on the results of the communication test, the suction points installed via coring are a viable alternative to the suction pit approach detailed in the IRM WP and will also be effective at achieving the design goals for the SSDS.
3. Figure 7 of the NYSDEC-approved IRM WP indicated that one test points would be installed in the basement and vacuum monitoring completed in five foot intervals to 20 feet in four directions in the basement. In addition to the location in the IRM WP, two additional areas in the basement were tested. As further detailed in the communication testing section describing the basement condition, testing was extended up to 30 feet and also investigated potential barriers to sub-surface flow (i.e., wall footings). The additional testing confirmed that the 20 foot ROI is appropriate throughout the basement.
4. Figure 9 of the NYSDEC-approved IRM WP indicated that all suction points would be installed utilizing 4-inch diameter piping. However, during the implementation of the communication test, 2.5-inch diameter piping was utilized at each suction point instead. However, as noted above, 3- to 4-inch diameter piping is proposed for the permanent suction points to be installed for the final SSDS design. The 2.5-inch piping was utilized during the communication test to allow for high flow, high pressure diagnostic testing where there are less head losses due to piping lengths. This deviation has been accounted for in the included design as further detailed below.

The goal of the SSDS is to induce flow and pressure at the extraction points consistent with the design. Head losses can be estimated using the Darcy Weisbach equation and provides the basis for balancing head losses.

$$\Delta H = f(LV^2/2gD)$$

where:

ΔH is Head loss.

f is a friction factor

L is length of pipe (in feet)

V is velocity of the air (in feet per second)

G is acceleration due to gravity, and

D is diameter of the pipe (in feet).

First, to document how the piping lengths affect the head losses, consider the tested condition which is approximately ten feet of 2.5 inch piping at approximately 20 cfm. By reviewing the above equation, there is a linear basis for a decrease in piping (i.e., half the piping would have half the head losses from piping). As noted below, the proposed S-1 system contains approximately 245 feet of piping, so the head losses would be 24.5 times greater in an installed system with 2.5 inch piping at 20 cfm. Given the same parameters, a four inch pipe, as proposed, would only decrease the head losses by 6.6 times (20 cfm at 2.5 inches is 2.4 ft/s and at 4 inches is 1 ft/s; squaring provides the 6.6 times difference).

In order to account for this change in the proposed system, consider the design of S-1 which is based on a flow rate of approximately 160 cfm (20 cfm at eight suction points). The system includes approximately 125 feet of three inch cast iron pipe connected to the suction points and 120 feet of four inch cast iron pipe as a header and riser.

If 2.5 inch piping was used throughout instead of the proposed piping, the velocity will increase and given that it is the only squared value, the resulting head losses are most affected by this term. With the design parameters, the head losses associated with the $L \cdot V^2$ component increase by over sixfold and the head losses associated with the L/D component increase by 1.4 times. There are no exponential terms in the friction factor that would be different for this comparison.

Length	Flow	D	V	V ²	L*V ²	L/D
Remedial Design Document						
125	20	0.25	1.7	2.9	360	500
120	160	0.33	7.6	58.4	7,003	360
Relative sum of V and D losses					7,363	860
Length	Flow	D	V	V ²	L*V ²	L/D
2.5 inch Pipe Scenario						
125	20	0.21	2.4	6.0	747	600
120	160	0.21	19.6	382.5	45,897	576
Relative sum of V and D losses					46,643	1,176

Note: units defined in the equation.

- These calculations provide the basis for comparison. Head losses from velocity component of the flow are six times higher (46,643 compared to 7,363) while the smaller diameter pipe increases the head losses by 1.4 times (1,176 compared to 860). The proposed system will allow for a fan working at 10 in-wc instead of 85 in-wc while still delivering the flow and pressure needed to depressurize the basement at 0.02 in-wc.
5. Based on the results of the pilot test and the required flow rates, the interior system piping was sized up to 3- to 4-inch diameter, depending on the location. While the 3- and 4-inch diameter piping is different from what was tested during implementation of the communication test, the larger diameter of piping will allow for the required flow rates while minimizing the head losses in a continuously-operating SSDS. The system has been designed so that it provides the necessary flow and pressure at the installed suction point, based on the pilot test results.
 6. Based on the results of the communication test, the proposed design for the final SSDS has changed from what was proposed in the NYSDEC-approved IRM WP. The reason for implementing the communication test is to identify any changes needed to the proposed design based on actual conditions in the field. Based on the results of the communication test, it was determined that a ROI of 20 ft can be achieved at each suction point in the basement; therefore, the number of suction points proposed for the SSDS has been increased in the basement to 23, and the layout of the vapor monitoring points has changed as well. While the design is different than what was proposed in the IRM WP, the newly proposed design will achieve the design goals and criteria for the SSDS (i.e., preventing soil vapor intrusion into the existing onsite building and depressurizing below the entirety of the building slabs at least -0.02 in-wc) based on the results of the communication test.
 7. As noted above, the proposed design for the final SSDS has changed from what was proposed in the NYSDEC-approved IRM WP in response to conditions encountered in the field and the results of the communication test conducted by Obar and Matthew M. Carroll, PE. As noted above, there was little change to the ROI, however, the suction pit required a greater air flow to achieve the same pressure. Due to the change in design, the SSDS details were also updated (Drawing X-102 in Attachment 3). While these details are different than what was depicted on Figure 9 of the NYSDEC-approved IRM WP, the methodology for installation of the system proposed in Drawing X-102 will also be effective at achieving the design goals of the SSDS as was confirmed during the pilot test. The suction pit on Figure 9 of the IRM WP is not the proposed design following implementation of the pilot test as it would increase the required air flow to depressurize the building. The installation methodology depicted on Drawing X-102 is recognized and generally accepted good engineering practice for the installation of an active SSDS.
 8. The at-grade portion of the building (System 4) was tested but did not meet the design criteria of -0.02 in-wc. A second communication test will be performed in the slab-on-grade portion of the onsite building to determine design parameters for a SSDS to depressurize this portion of the building. The results of the August 2025 communication test for the slab-on-grade-area, Area S4, will be summarized in the subsequent SSDS Design Document for the S4 Area SSDS.
 9. The pressure monitoring point locations on Figure 8 of the IRM Work Plan were revised based on the results of the pilot test and updated basement layouts. The locations were selected to bias the locations toward the intersection of pressure fields from the suction pits (MP-1, -3, -4, -6, -8 and -9) and to test the condition farthest from each riser (MP-3, -5 and -9). One additional point (from ten in the IRM Work Plan to eleven in this Remedial Design Document) is proposed and are laid out to document that the slab is

depressurized around the perimeter and center of the Site. The network of points as proposed will sufficiently show whether goals of the IRM Work Plan are met.

10. Figure 11 of the IRM WP showed one riser to the roof with the blower set at the back of the building. Drawing X-101 includes three risers brought through the building to the roof. The additional risers are consistent with the three systems that will be installed. The locations on the roof were selected to move the effluent from the rear-adjointing residential buildings. The additional risers will not affect the performance of the SSDS.

Conclusions

The soil vapor and indoor air impacts at the Site associated with residual contamination in soil and/or groundwater will be mitigated in the basement by the installation of three active SSDSs. The proposed SSDS designs and layouts are a viable alternative for achieving and maintaining the design goal of preventing soil vapor intrusion within the existing onsite building by inducing subsurface vacuum throughout the basement slabs. A minimum of -0.02 in-wc depressurization throughout the sub-slab has been determined as the criteria to meet the design goal.

Please contact us if you require any additional information.

Sincerely,



Matthew Carroll, P.E.
Principal / Environmental Engineer

Figure 1: Communication Test Locations

Table 1: SSDS Emissions Screen

Attachment 1: Diagnostic Report and Vapor Intrusion Mitigation System Design Plan

Attachment 2: PID Readings Collected During Communication Test

Attachment 3: Proposed SSDS Design and Details

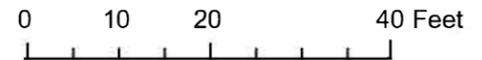
Attachment 4: SSDS Component Specification Sheets

Figure



Legend

- NYC Tax Lots
- [Purple Dashed Box] First Floor Layout
- [Black Dashed Box] Site Boundary
- Extraction Point
- Vacuum Monitoring Point



Reference:
 Floor Plan: TERRACRG Commercial Realty Group
 Parcel Boundaries: Contributing counties, NYS Office of Information Technology Services GIS Program Office (GPO) and NYS Department of Taxation and Finance's Office of Real Property Tax Services (ORPTS).

Interim Remedial Measures
 Work Plan
 127 12th Street
 Brooklyn, New York
 Block 1020, Lot 52

Matthew M. Carroll, PE
 1085 Sackett Avenue
 Bronx, NY 10461

Drawn By	LM
Checked By	MC
Date	January 2026
Scale	As Noted

Communication Test
 Locations

Figure 1

Drawing Title

Drawing No.

Table

Table 1 - SDS Emissions Screen

127 12th Street - Brooklyn, NY

Sample Name	Molecular	HTAC / Emissions	SV-2		Emissions Rate (lbs/yr)
Sample Date	Weight (g/mol)	Maximum	5/22/2023		
Lab Sample ID		(lbs/yr)	L2328582-02		
			ug/m3	ppmv	
cis-1,2-Dichloroethene	96.94	100	26.4	0.00666	0.132
Chloroform	119.37	100	752	0.154	3.762
Trichloroethene	131.38	500	537	0.0999	2.686
Toluene	92.141	100	19.7	0.00522	0.098
Tetrachloroethene	165.82	100	16100	2.37	80.414

Flow rate, cubic feet per minute (CFM) in basement for System 1: 150 CFM

Attachment 1
Diagnostic Report and Vapor Intrusion
Mitigation System Design Plan



DIAGNOSTIC REPORT &
VAPOR INTRUSION MITIGATION SYSTEM
DESIGN PLAN

Site Address:

127 12th Street
Brooklyn, New York

Prepared for:

Mr. Matthew Carroll, PE
Tenen Environmental
121 West 27th Street
Suite 303
New York, NY 10001

Prepared by:

Mr. Daniel Nuzzetti
Senior Project Engineer
OBAR Systems, Inc.
2969 Route 23
Newfoundland, NJ 07435

January 20, 2026

V3.0 (changes italicized)

Table of Contents

- 1. Background..... 3
- 2. General Building Information..... 3
- 3. Mitigation Concepts..... 3
- 4. Diagnostic Method..... 3
- 5. Data Analysis..... 4
 - 5.1. Analysis of data Series..... 4
 - 5.1.1. Suction Point 1 4
 - 5.1.2. Suction Point 1- Pit..... 4
 - 5.1.3. Suction Point 2..... 4
 - 5.1.4. Suction Point 3..... 4
- 6. System Design 5
- 7. Mitigation System Components..... 6
 - 7.1. System Blower 6
 - 7.2. Vertical Suction Points 6
 - 7.3. System Piping 6
 - 7.4. Pipe Hangers 7
 - 7.5. Test Ports 7
 - 7.6. Electrical 7
 - 7.7. Monitoring 7
 - 7.8. System Labels..... 7
 - 7.9. Carbon Drums..... 7
- 8. Post Installation..... 7
 - 8.1. As Built Drawings..... 7
 - 8.2. System Start Up and Commissioning..... 7
- 9. Logistics..... 8
 - 9.1. Permits 8
 - 9.2. Confirmation of Locations..... 8

Drawings

- SSD#1 – Diagnostic Map
- SSD#2 – Mapped ROIs
- SSD#3 – System Design
- SSD#4 – System Details

Attachments

- Attachment 1 – Diagnostic Tables
- Attachment 1 – Mitigation Blower
- Attachment 2 – Pipe, Supports, and Hangers
- Attachment 3 – Test Ports

1. Background

Obar Systems was retained by Tenen Environmental to provide a design for a sub slab depressurization system for the building located at 127 12th Street in Brooklyn, New York. Diagnostics were completed on August 7, 2025.

2. General Building Information

This report and its appendices apply to the entire *basement* footprint of the 2-story building measuring approximately 15,000 square feet. The majority of the building features a full height basement with a slab on grade area on the west end of the structure.

3. Mitigation Concepts

Volatile Organic Compounds (VOCs) located in the soil are drawn into the building by the negative pressure of the building relative to the surrounding soil. As a gas, the VOCs enter the structure through cracks and openings and can migrate through the concrete floor and walls. A common remedy to reverse the intrusion process is Sub Slab Depressurization (SSD), which is a system that depressurizes the soil under the slab. The concept is that by creating a vacuum beneath the slab, the soil gases will be drawn into the system where they can be discharged to a safe location.

4. Diagnostic Method

The method used for diagnostic measurement and system design involved coring 2 ½" suction holes in the concrete floors and 5/16" test holes at various distances from the suction holes. A specialized Sub Slab Diagnostic Vacuum (SSDV), capable of up to 120 cfm and a vacuum of 50 inches of water column ("w.c.) was used with a variable speed controller to define the flow and vacuum characteristics of the soil beneath the slab. The data obtained during the diagnostic investigation has been provided in the attached tables. The range of applied vacuum and flow rate used for each suction point was determined by evaluating the baseline data taken in the maximum flow and vacuum test performed at the beginning of each sampling series. The number of test point locations at each suction point was determined based on the results of the first sampling series at that location. *If it was observed that the ROI would exceed the initial number of test holes, additional holes were added as required. The number of suction points was determined based on the total required to fully define the sub slab permeability in each isolated slab area.*

The data collected at each suction point series includes; maximum vacuum and airflow at the suction point, vacuum 1 foot away from the suction point (SSP1), vacuum at each test point at multiple vacuum speeds or flow rates, and the distance each test point is from the suction point. *Measuring pressure differentials 1 foot from the applied vacuum source helps to determine the loss per foot function as a result of the soil permeability.*

5. Data Analysis

The information obtained from each suction point was examined independently to identify the associated area of influence (AOI) and estimated radius of influence (ROI) for that location during the applied test conditions. The test data from all the suction points were examined collectively to determine the number of full-scale SSD system suction points required to address the area of concern within the building. The test data was then used to determine the type and number of blowers required to effectively operate all of the full-scale SSD system suction points.

5.1. *Analysis of data Series*

For locations of all suction points and test points see attached drawing sheet (SSD-1) for full test results see attached diagnostic tables. The proposed ROIs are visually illustrated on drawing sheet SSD-2.

5.1.1. *Suction Point 1*

Suction Point 1 (S1) was located near an interior structural wall in the eastern end of the basement. The purpose of this suction point was to evaluate the ROI produced from full-scale suction points in this building area and to check for sub slab communication across the interior wall. The sub slab material encountered was loose sandy soils. This suction point revealed an ROI of approximately 25 feet at an applied vacuum of 10 inches of water column ("w.c.) with a resulting airflow yield of 17 cubic feet per minute (cfm). Communication was heavily diminished across the interior wall.

5.1.2. *Suction Point 1- Pit*

Suction Point 1-Pit (S1P) was located in the same location as S1, the primary suction hole was turned into a pit measuring approximately 18" x 18" and 24" deep at the center. The purpose of this diagnostic strategy was to determine if a pit style suction point would provide a larger ROI than S1. The pit style suction point revealed a similar ROI to that measured at S1 however, the airflow yield increased to approximately 35 cfm at the same applied vacuum level. For full results see the attached data tables.

5.1.3. *Suction Point 2*

Suction Point 2 (S2) was located centrally in the basement near a structural column. The primary purpose of this suction point was to confirm the data observed at S1 and determine if communication in the center room was similar to that observed in the eastern portion of the basement. A second slab was observed in some areas near S2, the sub slab material encountered was cindery soils. The suction point revealed an ROI of approximately 25 feet at an applied vacuum of approximately 10 "w.c. with a resulting airflow yield of 25 cfm.

5.1.4. *Suction Point 3*

Suction Point 3 (S3) was located in the boiler room area within the basement towards the western end of the building. The purpose of this suction point was to evaluate the ROI produced from full-scale suction points installed in this basement area. The sub slab material encountered was a mixture of what was observed at S1 and S2 but with large stones mixed in. The suction point revealed an ROI similar to that observed elsewhere in

the basement but at only 1.5 "w.c. of applied vacuum and a resulting airflow yield of 75 cfm.

The full-scale SSDS design was developed by using the diagnostic test results to produce a map that projects the estimated ROIs around suction points installed in locations that cover the area of concern. The SSDS suction point ROI was estimated by examining the vacuum data measured during the diagnostic survey at nearby test points. The required system operating vacuums were determined by using values measured at the diagnostic head and the SSPs, along with performance tables for the Sub Slab Diagnostic Vacuum.

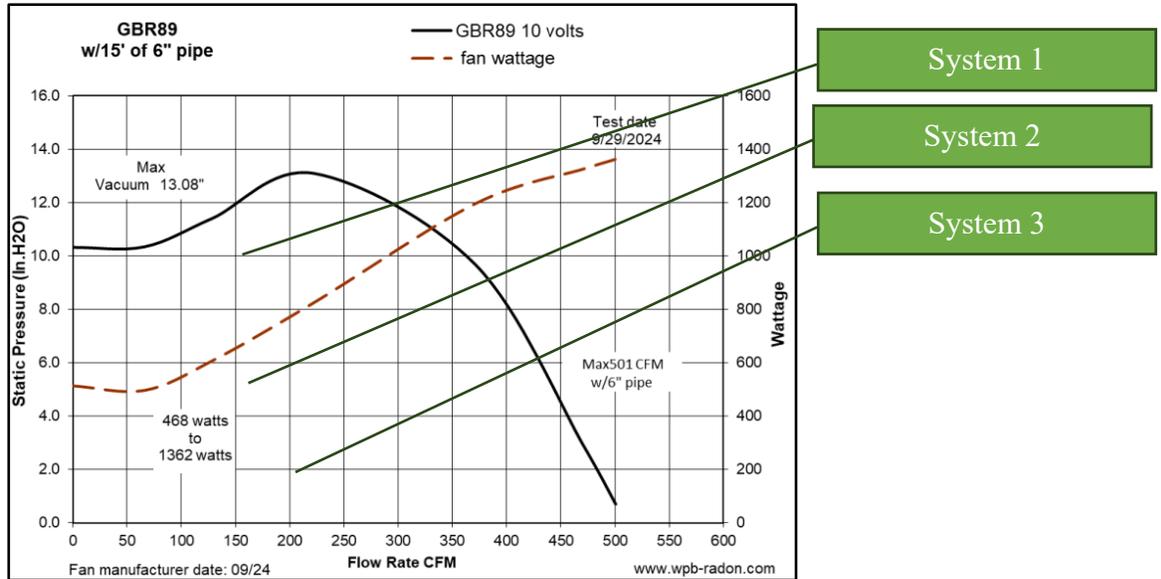
The basement area of the building featured fairly consistent 25-foot ROIs at 2-20 inches of water column of applied vacuum *at suction points S1 and S2 and 25-foot ROI at 1.5 inches of water column of applied vacuum at suction point S3, with airflow yields ranging from 17 cfm on the east end to 75 cfm on the west end.*

Based on the above readings, while a 25-foot ROI appears achievable, a conservative 20-foot ROI has been incorporated into the design in the basement and a 15-foot ROI in the slab on grade portion of the building. With regard to the slab on grade portion of the building, the selected fan can provide flow rates over 1,000 cfm, which is more than an order of magnitude above what was able to be done in the communication test. While the response is not necessarily limited, the pressure in this portion of the system is mainly due to head losses in the piping. Additional suction points can be added based on the results of the start-up pressure differential testing.

6. System Design

Three Sub Slab Depressurization System (SSDS) will be installed to depressurize the entire basement of the building. The systems will be paired with vertical suction points and exterior mounted highspeed brushless mitigation blowers. Systems 1, 2, and 3 will service the basement areas with GBR89 mitigation blowers mounted on the single story roof of the building.

The blower curves for the systems are shown below with the projected applied vacuums and airflows indicated.



- System 1
- System 2
- System 3

7. Mitigation System Components

7.1. System Blower

The blowers will be installed on the roof of the building approximately where indicated on drawing sheet SSD-3. The blowers will be installed on aluminum mounts with pipe pier foam blocks on the roof. The exhausts will terminate 1 foot above the roofline and 10 feet from any intake they are not at least two feet above. The blower locations and installation details are shown on the attached drawings, locations are approximate and should be verified prior to final mounting. Final roof flashing should be performed by a certified roofing professional.

7.2. Vertical Suction Points

The suction points will be installed by coring a 3 ½ inch holes through the slab and hand excavating approximately 0.5 cubic feet of sub slab material to a depth of 6 inches below the slab. The suction holes will be backfilled with crushed stone following clean out and sealed upon completion. The vertical risers will be installed and sealed directly into the suction holes. Each suction point will have a ball valve for balancing system airflow. See details sheet for suction point details.

7.3. System Piping

All system piping and fittings within the building will be 3-inch and 4-inch cast iron; refer to Attachment 2 for pipe specifications. Overhead piping will be installed in the locations shown on the attached drawing. All overhead piping will be installed as high as possible within the building and without the possibility of water traps. All overhead piping must have 1 inch of pitch per 8 feet of horizontal pipe in order to drain condensation. The suction points will have vertical riser pipes that connect into the overhead piping. The vertical riser pipes will be secured to walls or columns and concreted into the slab. Cut sheets for the pipe and fittings are attached.

7.4. Pipe Hangers

All pipes will be supported according to local code requirements. Overhead pipe will be secured with threaded rod, beam clamps, sammies, and swivel loop hangers. Vertical pipe will be secured to the walls or columns with strut, and galvanized unistrut pipe straps. Refer to Attachment 2 for pipe hanger specifications and details.

7.5. Test Ports

Sub Slab test ports will be installed within the systems' radius of influence to confirm sub slab vacuum. Suggested test port locations are shown on drawing sheet 3. GBR sub slab test ports will be installed by drilling a 20mm hole and hammering in the port. Riser test ports will be installed in each riser pipe for vacuum and airflow sampling. Riser ports will consist of a ½ inch well nut with a brass insert and 1/4 -20 stainless steel hex head bolt.

7.6. Electrical

All electrical work should be performed by a licensed electrician. All work is to be done in accordance with all state and local codes. The fans will require 240 volts and should be on dedicated breakers.

7.7. Monitoring

The systems will each feature a GBR25T vacuum gauge with built in audible/visual alarms that will alert in the event of system failure. The gauges will be paired with an Obar Instrument EDG wireless monitoring system for real time monitoring and alerts. The first year of monitoring is included and will be billed at a rate of \$165 per year following the initial year of operation.

7.8. System Labels

All exposed system piping will be labeled with a sticker indicating that the system is a vapor intrusion mitigation system. A sticker with the contact information of the installer will be located on the alarm panels.

7.9. Carbon Drums

Each system will feature a 55-gallon vapor phase carbon drum filled with virgin coconut husk carbon. Drums will be installed within the building on pallets to facilitate servicing and water drainage.

8. Post Installation

8.1. As Built Drawings

As-built drawings will be provided that show system locations, the monitoring and alarm location, and sub-slab vacuum monitoring test port locations after installation.

8.2. System Start Up and Commissioning

Upon system start up the mitigation fan will be tuned for optimal efficiency. The system's applied vacuum and airflow will be measured and reported. The sub slab pressure differentials at the permanent test ports will be measured and reported. A commissioning report that includes commissioning data, operations and maintenance procedures, as-built drawings, and all other requirements in accordance with guidance documents will be prepared and submitted. If areas are

discovered that do not meet depressurization goals, suction points will be added or existing points elongated to provide full coverage.

9. Logistics

9.1. Permits

All required municipal permits will be filed for prior to installing the SSDS.

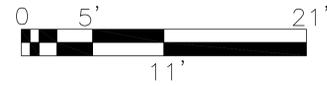
9.2. Confirmation of Locations

All equipment, pipe, and suction point locations should be verified by the installation contractor to be in accordance with local and national vapor intrusion standards prior to installation.

LEGEND:

- 3" SUCTION POINT
- 4" SUCTION POINT
- 15' RADIUS OF INFLUENCE
- 20' RADIUS OF INFLUENCE
- INTERIOR COLUMN
- INTERIOR COLUMN

Scale: 1" = 5'

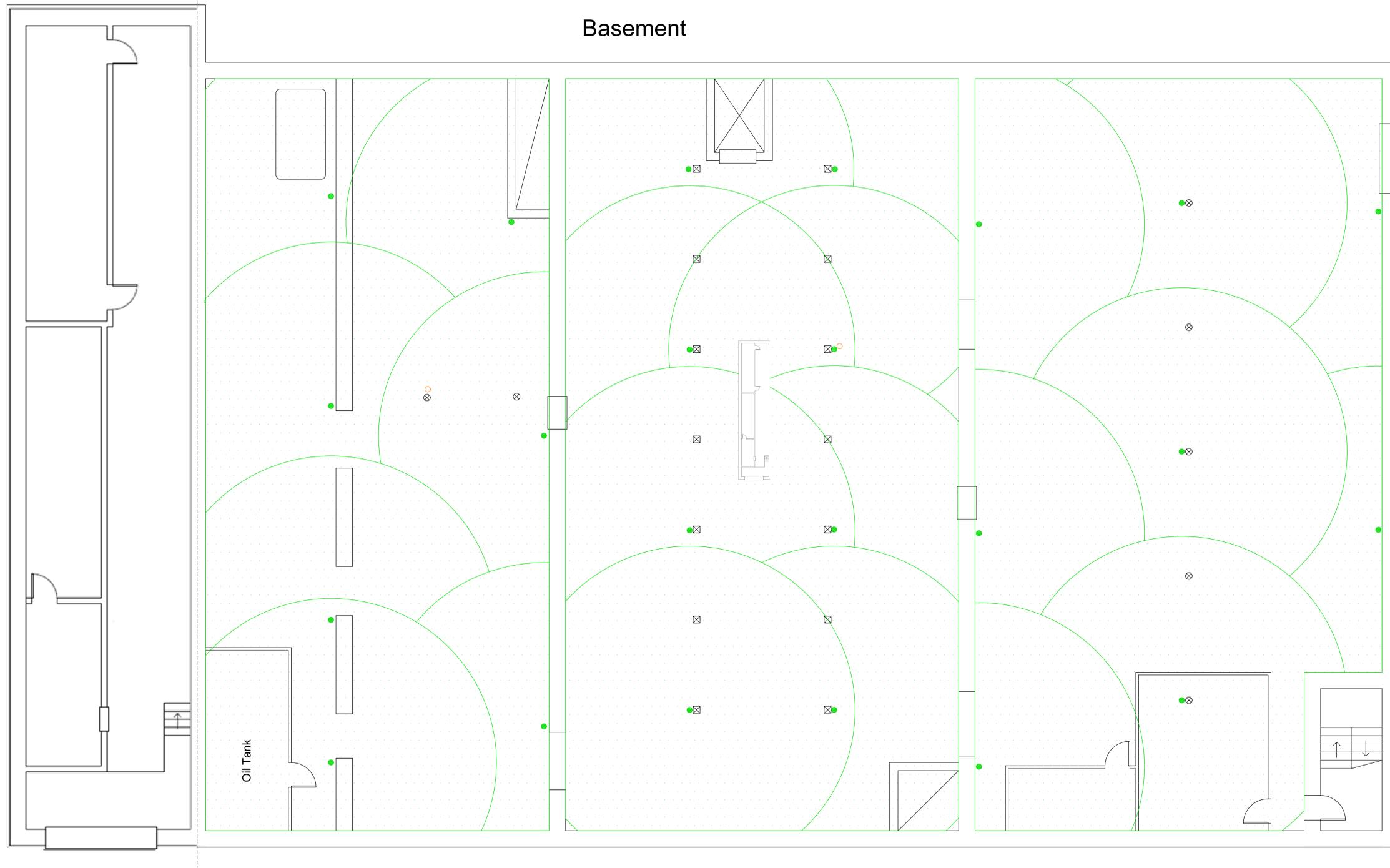


Notes:

NOISE

Slab on Grade

Basement



REV: DESCRIPTION BY: DATE:

OBAR SYSTEMS, INC.
2909 NJ 23, Newfoundland, NJ, 07435

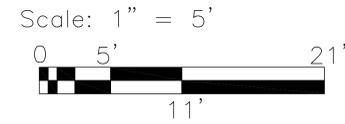


SITE: 127 12th Street
Brooklyn, New York
Block 1020, Lot 52

DATE: 10/23/2025 DRAWN: SM
SHEET #: SSD-2 SHEET NAME: Mapped ROIs SHEET SIZE: ARCH E1

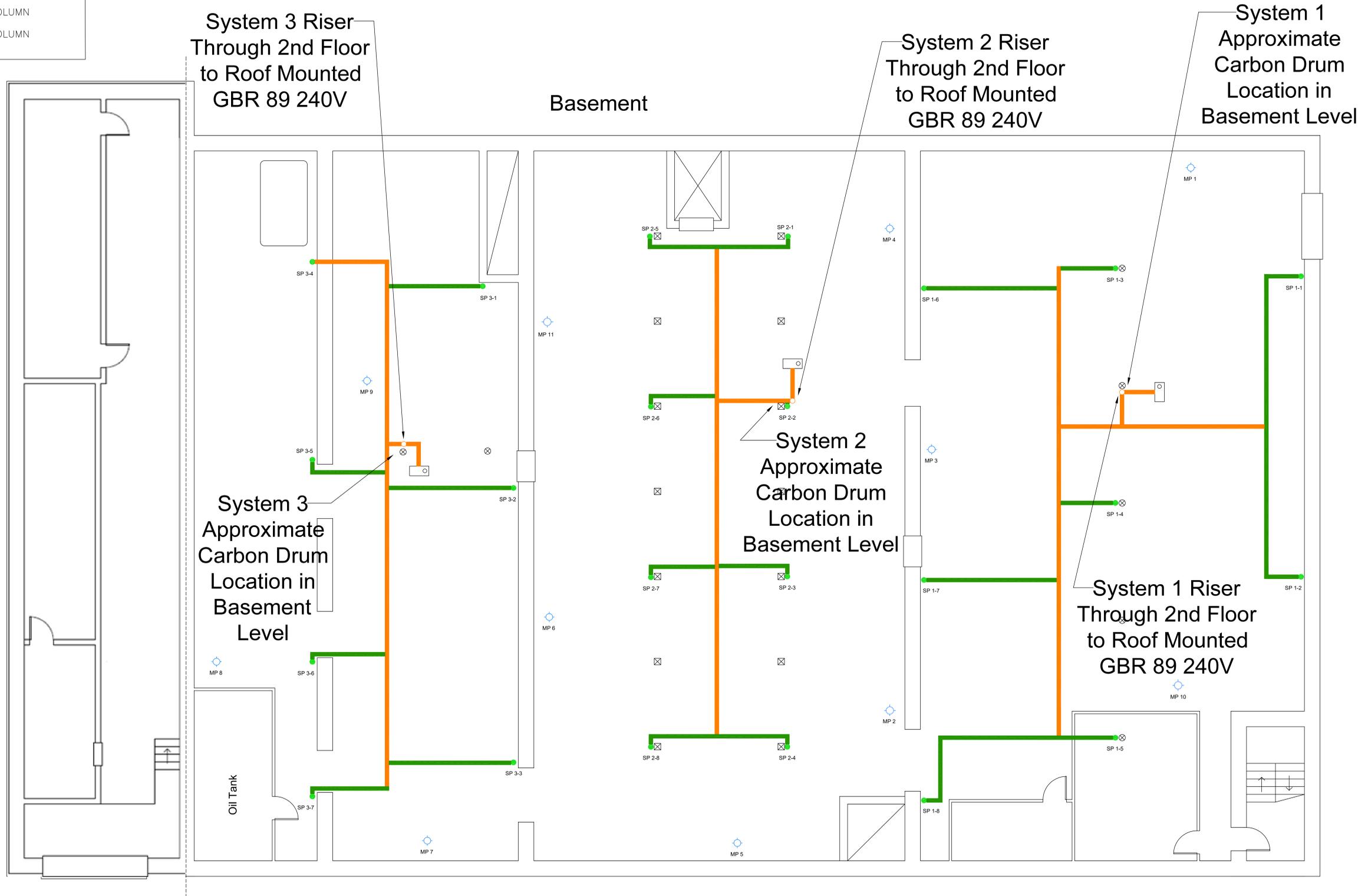
LEGEND:

- 3" SUCTION POINT
- 4" SUCTION POINT
- OVERHEAD 4" PIPE
- OVERHEAD 3" PIPE
- MITIGATION BLOWER
- ⊕ MONITORING TEST PORT
- ⊗ INTERIOR COLUMN
- ⊗ INTERIOR COLUMN



Notes:

Slab on Grade



REV:	DESCRIPTION:	BY:	DATE:

OBAR SYSTEMS, INC.
2909 NJ 23, Newfoundland, NJ, 07435



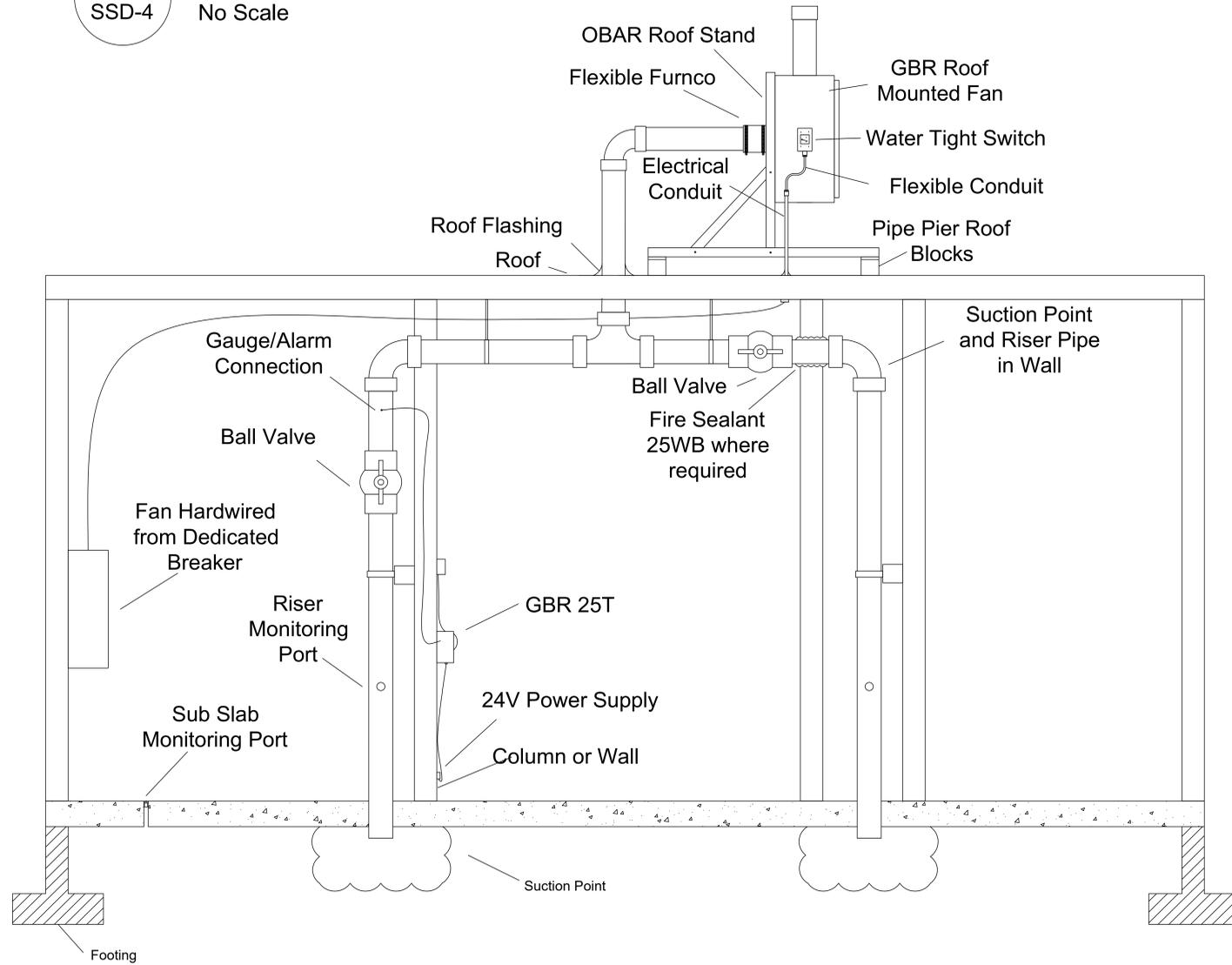
SITE: 127 12th Street
Brooklyn, New York
Block 1020, Lot 52

DATE:	10/23/2025	DRAWN:	SM
SHEET #:	SSD-3	SHEET NAME:	System Design
		SHEET SIZE:	ARCH E1

1

System Section View

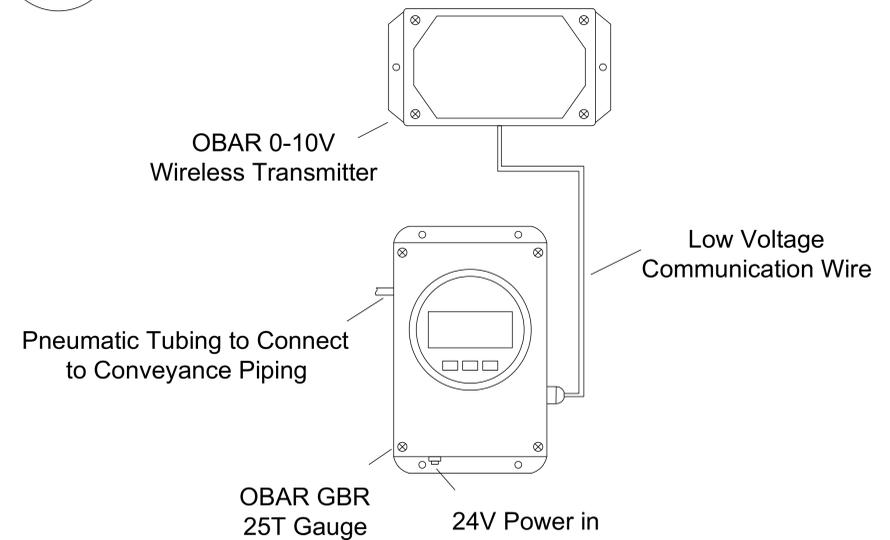
SSD-4 No Scale



2

GBR 25T Paired to 0-10V Transmitter

SSD-4 No Scale



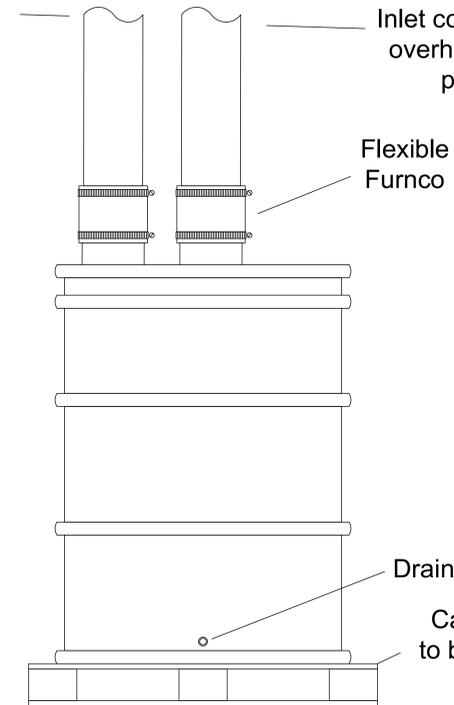
5

55 Gallon GAC Drum Detail

SSD-4 No Scale

Outlet connects to mitigation blower on the exterior of the building

Inlet connects to interior overhead conveyance pipe network



4

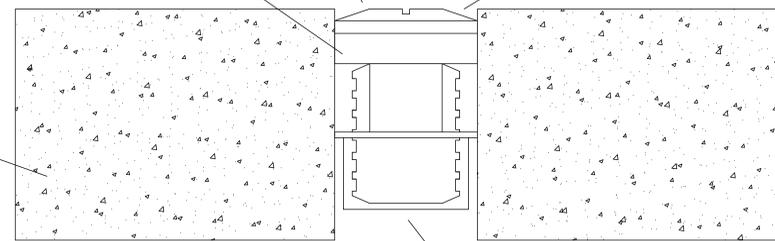
GBR Monitoring Port

SSD-4 No Scale

1/4" - 20 x 1" (Slotted Cap Head) Stainless Steel Bolt

1/4" - 20 Chloroprene Well Nut

Note: Top of Bolt Flush with Slab

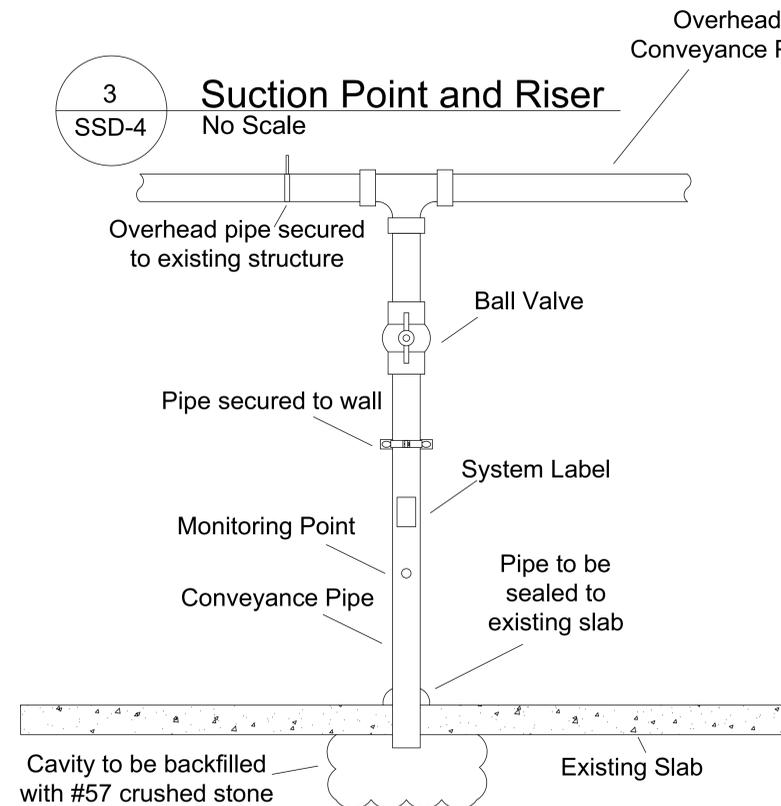


GBR Monitoring Port

3

Suction Point and Riser

SSD-4 No Scale



- Notes:
- ALL PIPING SHALL BE INSTALLED IN ACCORDANCE WITH LOCAL BUILDING CODE
 - ALL HORIZONTAL PIPE RUNS (ABOVE GROUND AND UNDERGROUND) MUST BE PITCHED A MINIMUM OF 1/8-INCH VERTICAL PER FOOT HORIZONTAL (1% SLOPE) TOWARDS SDDS SUCTION PIT/PIPE. THE SYSTEM SHALL BE INSTALLED SUCH THAT NO PORTION WILL ALLOW EXCESS ACCUMULATION OF CONDENSATION.
 - RISERS AND EXHAUST STACKS SHALL BE SECURELY ANCHORED WITH ADEQUATE STRUCTURAL SUPPORTS.
 - ELECTRICAL WORK TO BE COMPLETED BY LICENSED ELECTRICIAN IN ACCORDANCE TO CODE.
 - SYSTEM INSTALLATION SHALL ADHERE TO APPLICABLE LOCAL AND NATIONAL VAPOR INTRUSION TECHNICAL GUIDANCE DOCUMENTS
 - CONTRACTOR SHALL CONFIRM LOCATIONS OF ALL EQUIPMENT PIPING AND SUCTION POINTS ARE IN COMPLIANCE PRIOR TO INSTALLATION
 - THE WORK IN THE BUILDING SHALL BE DONE WHEN AND AS DIRECTED, AND IN A MANNER SATISFACTORY TO THE OWNER. THE WORK SHALL BE PERFORMED SO AS TO CAUSE THE LEAST POSSIBLE INCONVENIENCE AND DISTURBANCE TO THE PRESENT OCCUPANTS.
 - PIPING IS SHOWN DIAGRAMMATICALLY AND DOES NOT SHOW ALL OFFSETS, DROPS AND RISES OF RUNS. EXACT LOCATIONS ARE SUBJECT TO APPROVAL OF ARCHITECT. COORDINATION WITH EXISTING SERVICES, INCLUDING OF OTHER TRADES IS REQUIRED.
 - SUPPORT ALL PIPING FROM BUILDING STRUCTURE AND/OR FRAMING IN AN APPROVED MANNER. WHERE OVERHEAD CONSTRUCTION DOES NOT PERMIT FASTENING OR SUPPORTS FROM EQUIPMENT FURNISHED ADDITIONAL FRAMING.
 - PROVIDE ALL NECESSARY FLASHING AND COUNTER FLASHING TO MAINTAIN THE WATERPROOFING INTEGRITY OF THIS BUILDING AS REQUIRED BY THE INSTALLATION OF PIPES.
 - WHERE PENETRATIONS THROUGH FIRED RATED WALLS ARE NOT FIRE PROOFED THIS CONTRACTOR SHALL BE RESPONSIBLE TO SEAL SAME TO MAINTAIN THE RATED INTEGRITY.

REV	DESCRIPTION	BY	DATE
OBAR SYSTEMS, INC. 2969 NJ 23, Newfoundland, NJ, 07435			
127 12th Street Brooklyn, New York Block 1020, Lot 52			
DATE:	8/26/2025	DRAWN:	SM
SHEET NO:	SSD-4	SHEET NAME:	System Details
REVISION:		ARCH:	E1

Suction Point # :	S1				
Location / Description :	Near interior structural wall				
Soil Description	Loose Sandy Soil				
Temperature :	75°F				
Weather :	Clear				
Background :	0.000				
	Distance (ft.)	Series 1	Series 2	Series 3	Max
Airflow Yield (cfm)		27	17	13	33
Applied Vacuum ("w.c.)		20	10	6	26
SSP 1 (1' from applied)		4.8	2.4	1.5	6
TP-1	5	0.786	0.629	0.321	
TP-2	10	0.315	0.311	0.163	
TP-3	15	0.181	0.11	0.069	
TP-4	20	0.149	0.061	0.042	
TP-5	25	0.058	0.038	0.021	
TP-6	30	0.004	0.002	BG	
TP-7	5	1.25	0.681	0.404	
TP-8	15	BG	BG	BG	
TP-9	5	0.806	0.395	0.339	
TP-10	10	0.855	0.456	0.255	
TP-11	15	0.235	0.122	0.056	
TP-12	20	0.117	0.061	0.035	
TP-13	25	0.026	0.047	0.027	
TP-14	30	0.026	0.014	0.007	
TP-15	5	1.628	0.842	0.542	
TP-16	10	0.821	0.419	0.268	
TP-17	15	0.098	0.044	0.026	
TP-18	20	0.090	0.050	0.029	
TP-19	25	0.021	0.013	0.006	
TP-20	30	0.003	0.002	BG	
TP-21	12	0.001	BG	BG	

Test Point data is reported in inches of water column.
All pressure values negative unless indicated otherwise.
BG: Background

Suction Point # :	S1-Pit				
Location / Description :	Same as S1				
Soil Description	Same as S1				
Temperature :	75°F				
Weather :	Clear				
Background :	0.000				
	Distance (ft.)	Series 1	Series 2	Series 3	Max
Airflow Yield (cfm)		50	35	23	55
Applied Vacuum ("w.c.)		18	10	6	19
SSP 1 (1' from applied)		NA	NA	NA	NA
TP-1	5	2.31	1.492	0.659	
TP-2	10	0.619	0.67	0.386	
TP-3	15	0.421	0.262	0.146	
TP-4	20	0.257	0.161	0.096	
TP-5	25	0.153	0.077	0.058	
TP-6	30	0.009	0.005	0.003	
TP-7	5	4.68	1.991	1.629	
TP-8	15	0.006	0.003	BG	
TP-9	5	2.201	1.28	0.77	
TP-10	10	2.126	0.987	0.226	
TP-11	15	0.59	0.245	0.201	
TP-12	20	0.248	0.169	0.105	
TP-13	25	0.204	0.126	0.069	
TP-14	30	0.074	0.04	0.017	
TP-15	5	3.758	2.224	1.393	
TP-16	10	1.848	1.109	0.675	
TP-17	15	0.242	0.133	0.076	
TP-18	20	0.245	0.137	0.079	
TP-19	25	0.057	0.032	0.016	
TP-20	30	0.009	0.004	0.001	
TP-21	12	0.005	0.003	BG	

Test Point data is reported in inches of water column.
All pressure values negative unless indicated otherwise.
BG: Background

Suction Point # :	S-2			
Location / Description :	Central basement area			
Soil Description	2 Slabs - Clinders			
Temperature :	75°F			
Weather :	Clear			
Background :	0.000			
	Distance (ft.)	Series 1	Series 2	Max
Airflow Yield (cfm)		38	25	45
Applied Vacuum ("w.c.)		20	10	25
SSP 2 (1' from applied)		0.300	0.75	0.36
TP-22	5	0.022	0.087	
TP-23	10	0.051	0.030	
TP-24	15	0.112	0.068	
TP-25	20	0.036	0.027	
TP-26	25	0.014	0.008	
TP-27	5	0.383	0.235	
TP-28	10	0.112	0.070	
TP-29	15	0.038	0.018	
TP-30	20	0.036	0.016	
TP-31	25	0.003	0.002	
TP-32	5	BH	BH	
TP-33	10	0.208	0.126	
TP-34	15	0.068	0.034	
TP-35	20	0.055	0.037	
TP-36	25	0.048	0.027	
TP-37	30	BG	BG	
TP-38	5	BH	BH	
TP-39	10	0.102	0.065	
TP-40	15	0.065	0.010	
TP-41	24.5	BG	BG	

Test Point data is reported in inches of water column.
All pressure values negative unless indicated otherwise.
BG: Background
BH: Bad Hole

Suction Point # :	S-3			
Location / Description :	Boiler Room/ Adjacent			
Soil Description	Mixture of soil observed at S1 and S2 w/ round stones			
Temperature :	85°F			
Weather :	Clear			
Background :	0.000			
	Distance (ft.)	Series 1	Series 2	Max
Airflow Yield (cfm)		75	62	82
Applied Vacuum ("w.c.)		1.5	1	1.9
SSP 3 (1' from applied)		0.152	0.098	0.118
TP-42	5	0.086	0.063	
TP-43	10	0.065	0.048	
TP-45	15	0.055	0.041	
TP-46	20	0.018	0.013	
TP-47	25	0.008	0.006	
TP-48	30	0.008	0.006	
TP-49	5	0.089	0.068	
TP-50	5	0.025	0.019	
TP-51	10	0.024	0.018	
TP-52	15	0.024	0.018	
TP-53	20	0.023	0.017	
TP-54	25	0.023	0.017	
TP-55	5	0.081	0.061	
TP-56	10	0.080	0.061	
TP-57	15	0.070	0.053	

Test Point data is reported in inches of water column.
All pressure values negative unless indicated otherwise.
BG: Background

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.

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.



GBR89 WITH ROOF MOUNT

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 26 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

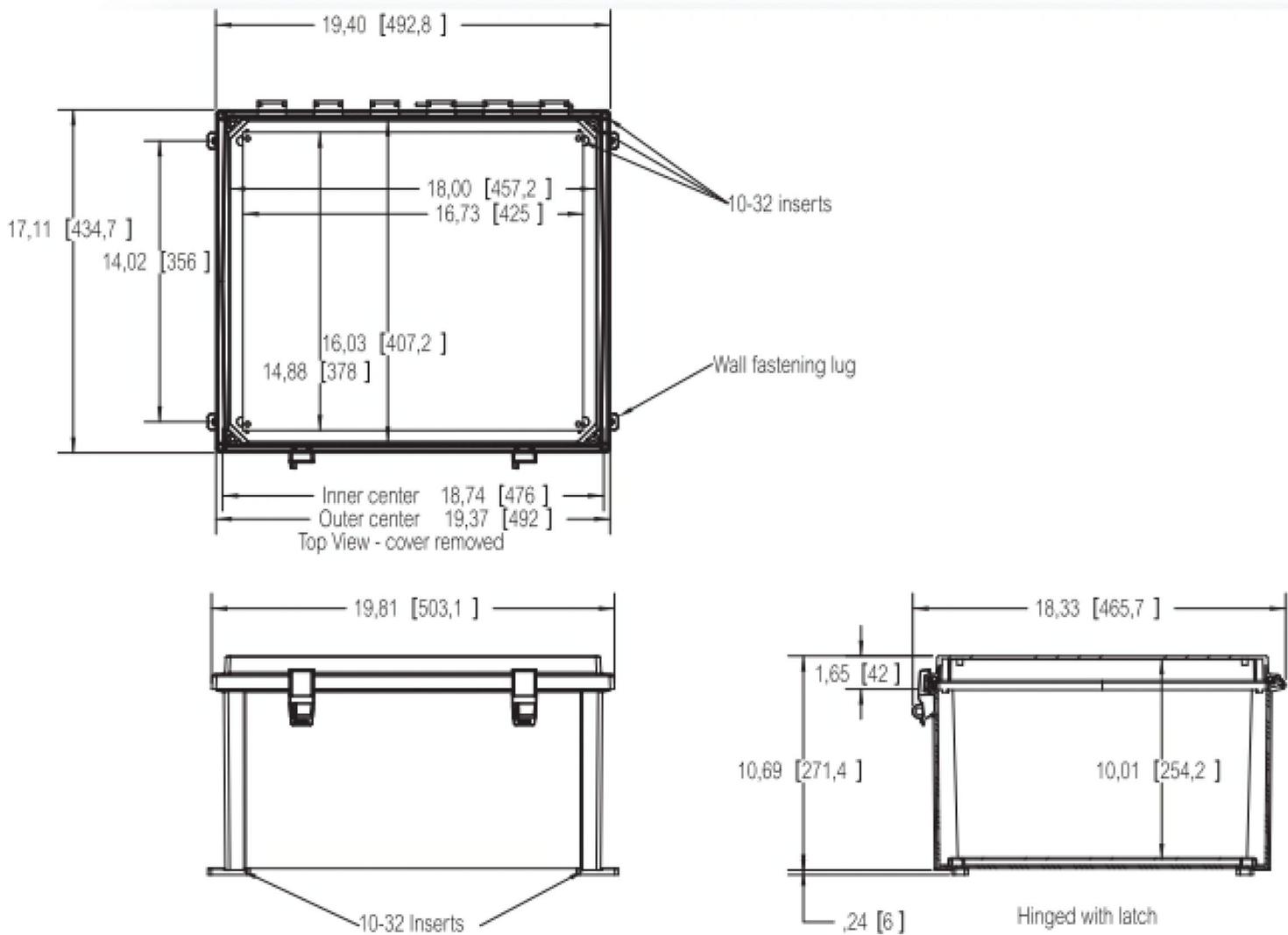
UV resistance: UL 508

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

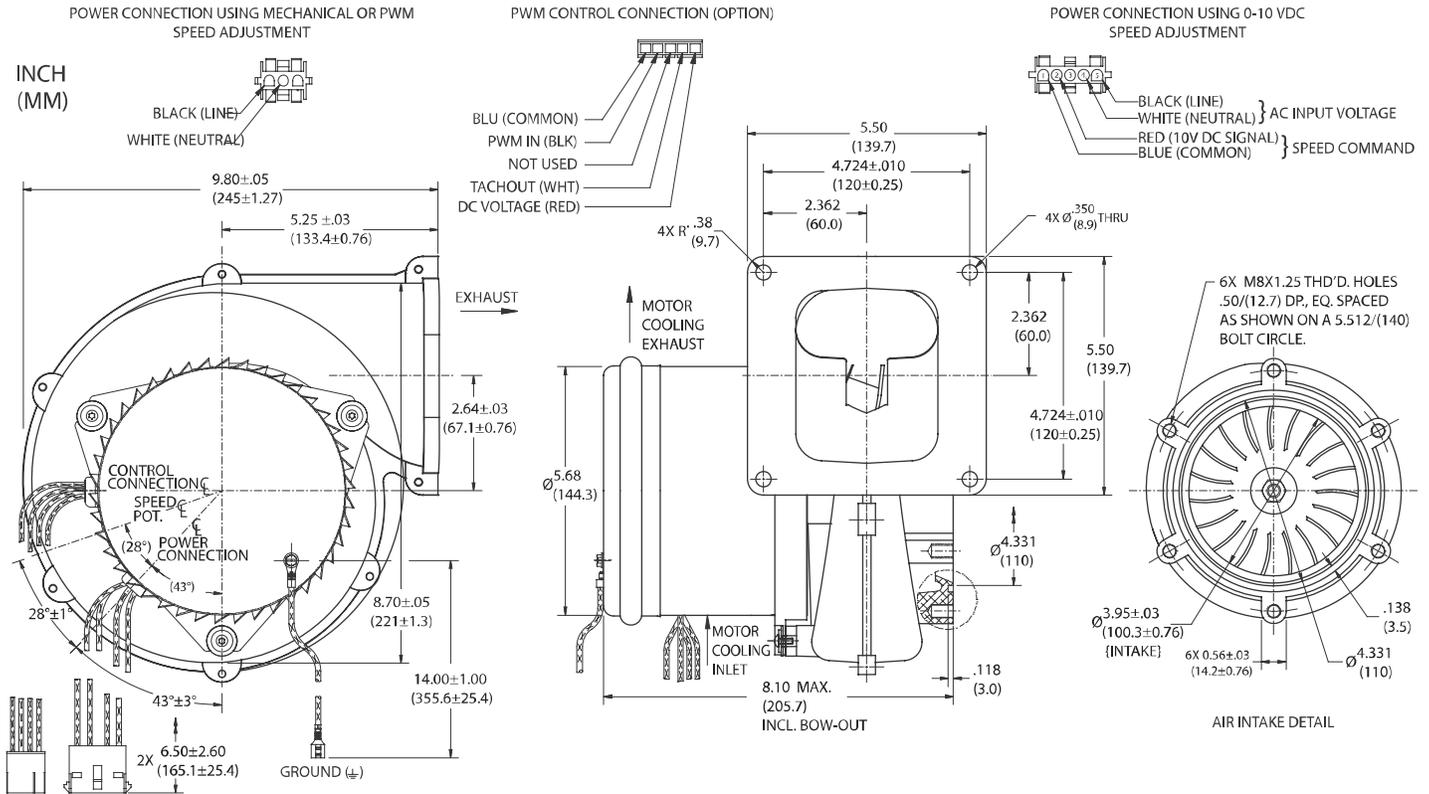


High Voltage Brushless DC Blowers

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

240 Volt AC Input, Single Phase, High Output

Nautilair



		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.

This document is for informational purposes only and should not be considered as a binding description of the products or their performance in all applications. The performance data on this page depicts typical performance under controlled laboratory conditions. AMETEK is not responsible for blowers driven beyond factory specified speed, temperature, pressure, flow or without proper alignment. Actual performance will vary depending on the operating environment and application. AMETEK products are not designed for and should not be used in medical life support applications. AMETEK reserves the right to revise its products without notification. The above characteristics represent standard products. For product designed to meet specific applications, contact AMETEK Technical & Industrial Products Sales department.

AMETEK TECHNICAL & INDUSTRIAL PRODUCTS

627 Lake Street, Kent OH 44240

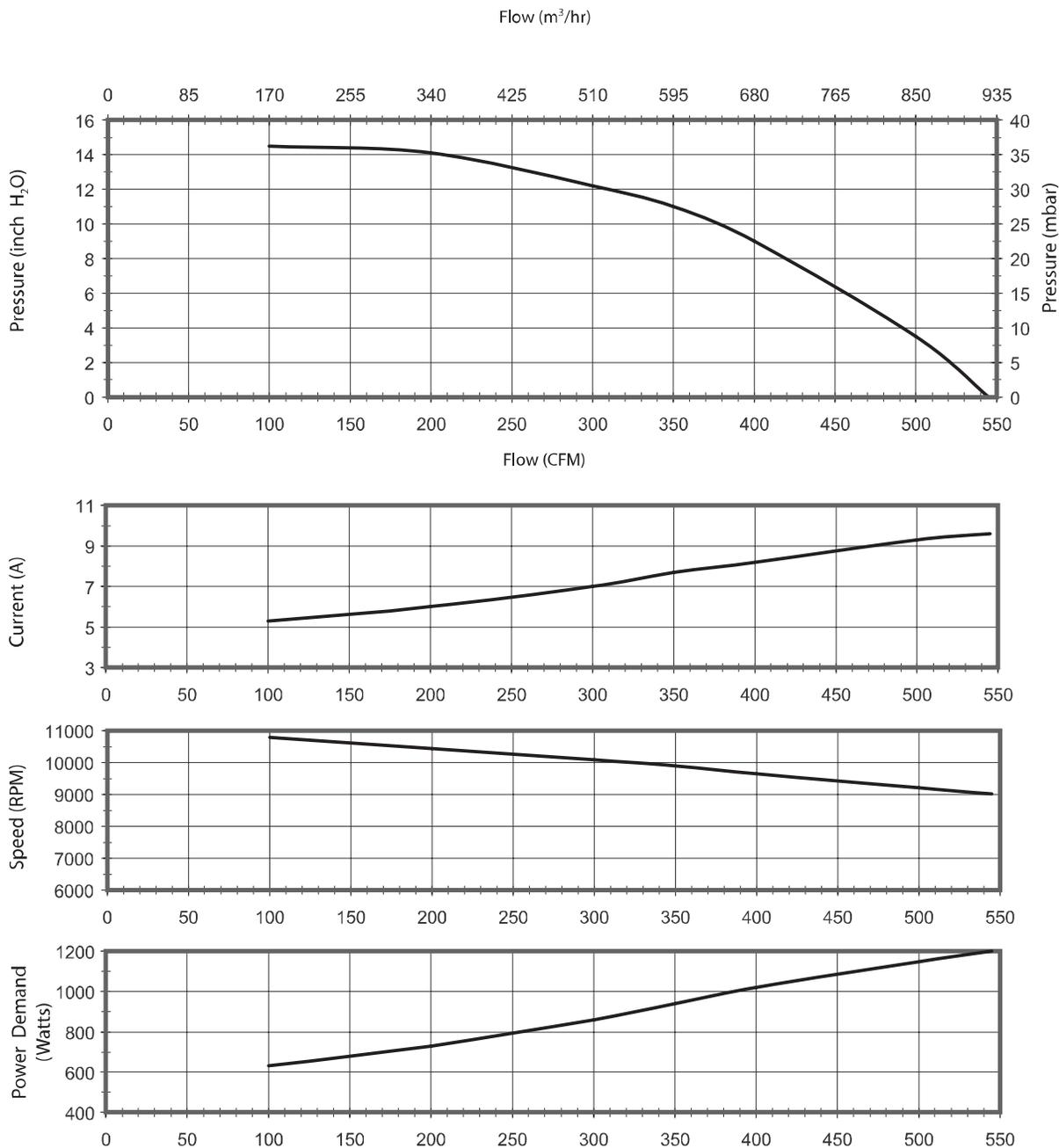
USA: +1 251-256-6601 - Europe: +44 (0) 845 366 9664 - Asia: +86 21 5763 1258

www.ametektip.com

B 47

AMETEK
PRECISION MOTION CONTROL

Typical Performance



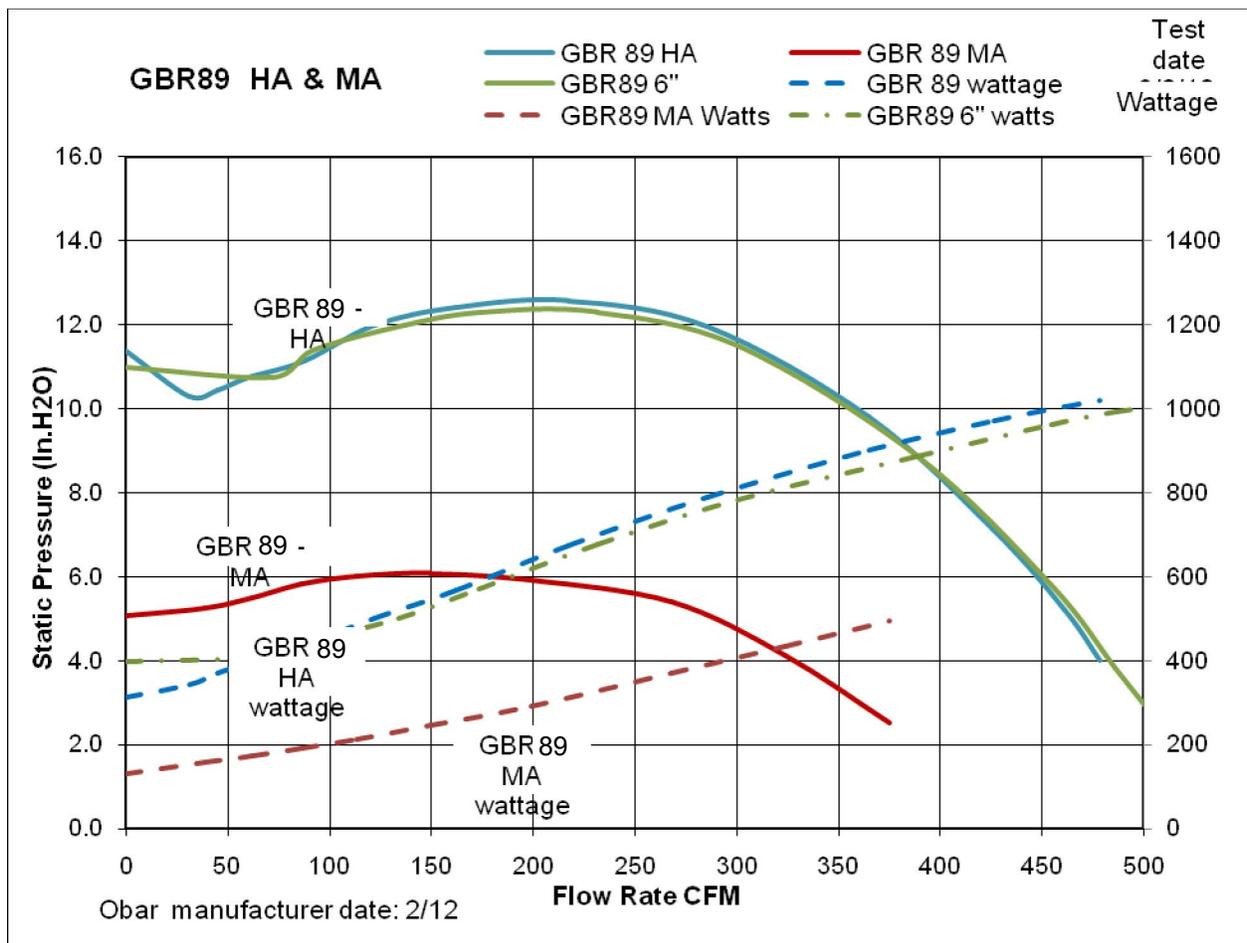
Data presented represents blower performance at STANDARD AIR DENSITY, .075 lb/ft³ (29.92" Hg, Sea Level, 68° F)
 Vacuum performance available upon request.

This document is for informational purposes only and should not be considered as a binding description of the products or their performance in all applications. The performance data on this page depicts typical performance under controlled laboratory conditions. AMETEK is not responsible for blowers driven beyond factory specified speed, temperature, pressure, flow or without proper alignment. Actual performance will vary depending on the operating environment and application. AMETEK products are not designed for and should not be used in medical life support applications. AMETEK reserves the right to revise its products without notification. The above characteristics represent standard products. For product designed to meet specific applications, contact AMETEK Technical & Industrial Products Sales department.

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

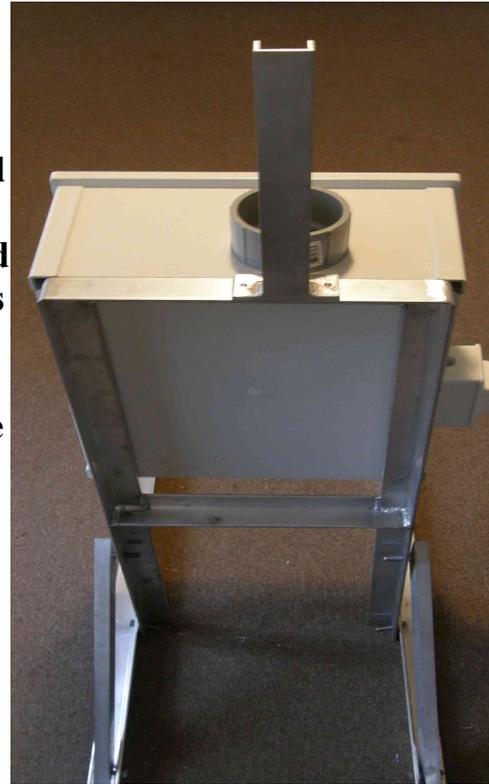
Maximum airflow with no exhaust piping and 8' of 6" piping is 529 CFM

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



GBR ROOF MOUNT

The GBR Roof Mount is designed for the GBR series fans but can be adapted to accept other fans such as the Fantech HP series. Constructed of 3/16 x 1 1/2 welded aluminum with stainless hardware the mount is ready for installation and does not require painting. . The mount measures 36" high, 17" wide and has a base of 40" x 17". There is an additional 12" extension to secure the discharge. The mount can be used with Pipe Pier mounts or fastened directly to curbing or other common supports.



GBR FAN MOUNT WITH GBR76 FAN



GBR FAN MOUNT WITH FANTECH ADAPTER



GBR FAN MOUNT WITH FANTECH FAN



Cast Iron Soil Pipe Suggested Short Form Specification

Hubless Cast Iron Soil Pipe and Fittings:

Hubless Cast Iron pipe and fittings shall be manufactured from gray cast iron and shall conform to ASTM A 888 and CISPI Standard 301. All pipe and fittings shall be marked with the collective trademark of the Cast Iron Soil Pipe Institute  and listed by NSF® International. Hubless Couplings shall conform to CISPI Standard 310, shall be manufactured in the United States, and be certified by NSF® International. Heavy Duty couplings shall conform to ASTM C 1540, shall be manufactured in the United States, and shall be used if indicated. Gaskets shall conform to ASTM C 564. All pipe and fittings to be produced by a single manufacturer and are to be installed in accordance with manufacturer's recommendations and applicable code requirements. Couplings shall be installed in accordance with the manufacturer's band tightening sequence and torque recommendations. Tighten bands with a properly calibrated torque limiting device. The system shall be hydrostatically tested after installation to 10 ft. of head (4.3 psi maximum). **WARNING!** Never test with or transport/store compressed air or gas in Cast Iron pipe or fittings. Doing so can result in explosive failures and cause severe injury or death.

Hub and Spigot Cast Iron Soil Pipe and Fittings:

Hub and Spigot Cast Iron pipe and fittings shall be manufactured from gray cast iron and shall conform to ASTM A 74. All pipe and fittings shall be marked with the collective trademark of the Cast Iron Soil Pipe Institute  and listed by NSF® International.

Pipe and fittings to be [pick one or both]:

- Service (SV) or
- Extra Heavy (XH)

Joints can be made using a compression gasket manufactured from an elastomer meeting the requirements of ASTM C 564 or lead and oakum. All pipe and fittings to be produced by a single manufacturer and are to be installed in accordance with manufacturer's recommendations and applicable code requirements. The system shall be hydrostatically tested after installation to 10 ft. of head (4.3 psi maximum). **WARNING!** Never test with or transport/store compressed air or gas in Cast Iron pipe or fittings. Doing so can result in explosive failures and cause severe injury or death.

SUBMITTAL FOR CHARLOTTE PIPE® HUBLESS CAST IRON SOIL PIPE AND FITTINGS

Date: _____

Job Name: _____

Location: _____

Engineer: _____

Contractor: _____

► Scope:

This specification covers Hubless Cast Iron pipe, fittings, and couplings used in sanitary drain, waste and vent (DWV), sewer, and storm drainage applications. This system is intended for use in non-pressure applications.

► Specification:

Hubless Cast Iron pipe and fittings shall be manufactured from gray cast iron and shall conform to ASTM A 888 and CISPI Standard 301. All pipe and fittings shall be marked with the collective trademark of the Cast Iron Soil Pipe Institute®  and listed by NSF® International. Hubless Couplings shall conform to CISPI Standard 310, shall be manufactured in the United States, and be certified by NSF® International. Heavy Duty and Medium Duty couplings shall conform to ASTM C 1540, shall be manufactured in the United States, and shall be used if indicated.

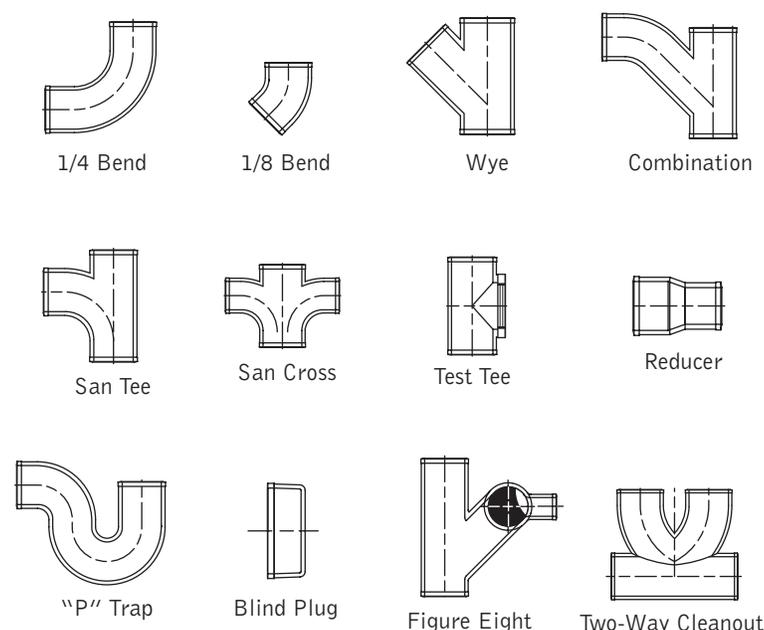
► Installation:

Installation shall comply with the latest installation instructions published by Charlotte Pipe and Foundry Company® and shall conform to all applicable plumbing, fire, and building code requirements. The system shall be hydrostatically tested after installation to 10 ft. of head (4.3 psi maximum). **WARNING!** Never test with or transport/store compressed air or gas in Cast Iron pipe or fittings. Doing so can result in explosive failures and cause severe injury or death.

► Referenced Standards:

- ASTM C 564: Rubber Gaskets for Cast Iron Soil Pipe and Fittings
- CISPI 301: Hubless Cast Iron Soil Pipe and Fittings
- CISPI 310: Hubless Couplings for Cast Iron Soil Pipe and Fittings
- ASTM C 1277: Hubless Couplings
- ASTM C 1540: Hubless Medium Duty and Heavy Duty Couplings





Not all fitting patterns shown

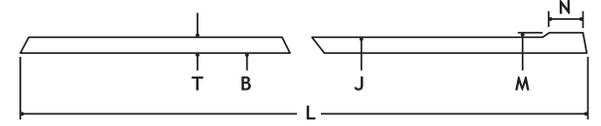


TABLE 1
DIMENSIONS AND TOLERANCES (IN INCHES) OF SPIGOTS
AND BARRELS FOR NO-HUB PIPE AND FITTINGS

Size	Inside Barrel Diameter	Outside Diameter Barrel	Outside Diameter Spigot	Width Spigot Bead N	Thickness of Barrel		Gasket Positioning Lug
	B	J	M	(± .13)	T-Nom.	T-Min.	W
1 1/2	1.50 ± .09	1.90 ± .06	1.96 ± .06	.25	.16	.13	1.13
2	1.96 ± .09	2.35 ± .09	2.41 ± .09	.25	.16	.13	1.13
3	2.96 ± .09	3.35 ± .09	3.41 ± .09	.25	.16	.13	1.13
4	3.94 ± .09	4.38 ± .09	4.44 ± .09	.31	.19	.15	1.13
5	4.94 ± .09	5.30 ± .09	5.36 ± .09	.31	.19	.15	1.50
6	5.94 ± .09	6.30 ± .09	6.36 ± .09	.31	.19	.15	1.50
8	7.94 ± .13	8.38 ± .09	8.44 ± .09	.31	.23	.17	2.00
10	10.00 ± .13	10.56 ± .09	10.62 ± .09	.31	.28	.22	2.00
12	11.94 ± .09	12.50 ± .13	12.62 ± .13	.31	.28	.22	2.75
15	15.11 ± .09	15.83 ± .13	16.12 ± .13	.31	.36	.30	2.75

Note: Charlotte Pipe does not recommend or warrant installations joined with unshielded hubless couplings.

Charlotte Pipe and Foundry Company • P.O. Box 35430 Charlotte, NC 28235 • (800) 438-6091 • www.charlottepipe.com

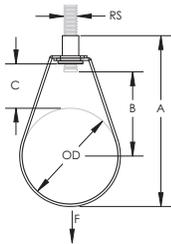
Charlotte Pipe and Charlotte Pipe and Foundry Company are registered trademarks of Charlotte Pipe and Foundry Company.

115 Standard Duty Loop Hanger



The 115 Standard Duty Loop Hanger is ideal for suspending stationary, non-insulated pipe lines, including CPVC pipes, in fire sprinkler systems. A knurled insert nut helps simplify vertical adjustments and flared edges on the base (1/2" to 4" sizes) help protect pipes from coming into contact with any sharp edges of the hanger.

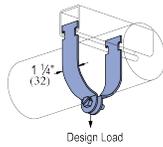
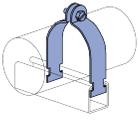
- Flared edges help prevent any sharp surfaces from coming into contact with the pipe (1/2" to 4" sizes)
- Retained insert nut helps ensure the loop hanger and insert nut stay together
- Recommended for the suspension of stationary non-insulated pipe lines
- Manufactured to use the minimum rod size permitted by NFPA® for fire sprinkler piping
- Conforms with Federal Specification WW-H-171 (Type 10), Manufacturers Standardization Society (MSS) SP-58 (Type 10)



Material: Steel
Finish: Pregalvanized



Part Number	Pipe Size	Outer Diameter OD	Rod Size RS	A	B	C	Static Load F	Certifications
1150050EG	1/2"	0.840"	3/8"	2 13/16"	1 1/8"	1"	300 lb	cULus
1150075EG	3/4"	1.050"	3/8"	3"	1 3/16"	15/16"	300 lb	cULus, FM
1150100EG	1"	1.315"	3/8"	3 1/4"	1 3/8"	15/16"	300 lb	cULus, FM
1150125EG	1 1/4"	1.660"	3/8"	3 9/16"	1 1/2"	15/16"	300 lb	cULus, FM
1150150EG	1 1/2"	1.900"	3/8"	3 13/16"	1 5/8"	15/16"	300 lb	cULus, FM
1150200EG	2"	2.375"	3/8"	4 1/4"	1 7/8"	15/16"	300 lb	cULus, FM
1150250EG	2 1/2"	2.875"	3/8"	5 15/16"	3 7/16"	2"	525 lb	cULus, FM
1150300EG	3"	3.500"	3/8"	6 9/16"	3 1/2"	1 15/16"	525 lb	cULus, FM
1150350EG	3 1/2"	4.000"	3/8"	7 1/16"	3 3/4"	1 15/16"	585 lb	cULus, FM
1150400EG	4"	4.500"	3/8"	7 9/16"	4"	1 15/16"	650 lb	cULus, FM
1150500EG	5"	5.563"	1/2"	9 13/16"	4 3/4"	2 1/4"	1,000 lb	cULus, FM
1150600EG	6"	6.625"	1/2"	11 5/16"	6 5/16"	3 5/16"	1,000 lb	cULus, FM
1150800EG	8"	8.625"	1/2"	12 7/8"	6 7/8"	2 7/8"	1,000 lb	cULus, FM



Material:

- The steel meets or exceeds the physical properties of ASTM A1011 GR 33, except with SS, ST & AL finishes.

Finishes:

- **Electrogalvanized (EG):** Conforms to ASTM B633, Type III SC1
- **Unistrut Defender (DF):** Conforms to ASTM A1059
- **Hot Dip Galvanized (HG):** Conforms to ASTM A123 or A153
- **Perma-Gold (ZD):** Conforms to ASTM B633, Type II SC1
- **Copper Coated (CC):** TBD
- **Everdur (E EG):** TBD
- **Stainless Steel, Type 304 (SS):** ASTM A240, Type 304 *
- **Stainless Steel, Type 316 (ST):** ASTM A240, Type 316 *
- **Aluminum (AL):** TBD

* These materials have different physical properties and performance characteristics. Please [contact us](#) for design support.

Material & Finish Combinations:

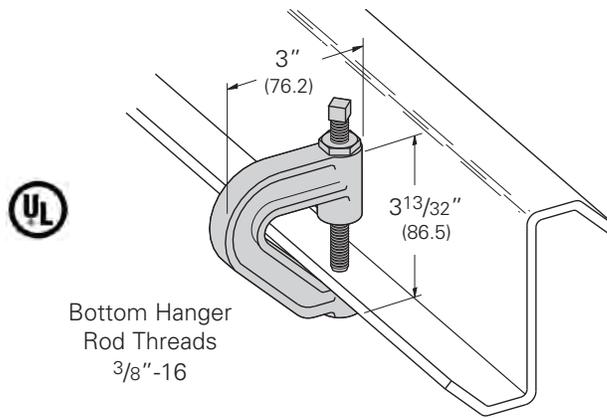
Material / Finish	Part Number Suffix	Pipe Clamp Material / Finish	Fasteners (Screw & Nut) Material / Finish	Example
Electro-galvanized	EG	EG	EG	P1109 EG
Hot-dipped galvanized	HG	HG	SS	P1109 HG
Unistrut Defender	DF	DF	DF	P1109 DF
Stainless Steel Type 304	SS	SS	SS	P1109 SS
Stainless Steel Type 316	ST	ST	SS	P1109 ST
Aluminum	AL	AL	AL	P1109 AL
Copper Coated	CC	CC	CC	P1109 CC
Everdur	E EG	EG	E	P1109E EG

Part No.	O.D. Size	Finish	Product Weight / Piece (lbs)
P2024	1/4" (6.4)	EG	0.08
P2024	1/4" (6.4)	HG	0.085
P2024	1/4" (6.4)	SS	0.08
P2024	1/4" (6.4)	ST	0.08
P2024	1/4" (6.4)	AL	0.027
P2025	3/8" (9.5)	EG	0.08
P2025	3/8" (9.5)	HG	0.085
P2025	3/8" (9.5)	SS	0.08
P2025	3/8" (9.5)	ST	0.08
P2025	3/8" (9.5)	AL	0.028
P2026	1/2" (12.7)	EG	0.09
P2026	1/2" (12.7)	HG	0.095
P2026	1/2" (12.7)	SS	0.09
P2026	1/2" (12.7)	ST	0.09
P2026	1/2" (12.7)	AL	0.03
P2027	5/8" (15.9)	EG	0.1
P2027	5/8" (15.9)	HG	0.106
P2027	5/8" (15.9)	SS	0.1
P2027	5/8" (15.9)	ST	0.1
P2027	5/8" (15.9)	AL	0.033
P2028	3/4" (19.1)	EG	0.11
P2028	3/4" (19.1)	HG	0.117
P2028	3/4" (19.1)	SS	0.11
P2028	3/4" (19.1)	ST	0.11
P2028	3/4" (19.1)	AL	0.037
P2029	7/8" (22.2)	EG	0.12
P2029	7/8" (22.2)	HG	0.127
P2029	7/8" (22.2)	SS	0.12
P2029	7/8" (22.2)	ST	0.12
P2029	7/8" (22.2)	AL	0.04
P2030	1" (25.4)	EG	0.14
P2030	1" (25.4)	HG	0.148
P2030	1" (25.4)	SS	0.14
P2030	1" (25.4)	ST	0.14
P2030	1" (25.4)	AL	0.07
P2031	1-1/8" (28.6)	EG	0.15
P2031	1-1/8" (28.6)	HG	0.16
P2031	1-1/8" (28.6)	SS	0.15
P2031	1-1/8" (28.6)	AL	0.05
P2032	1-1/4" (31.8)	EG	0.16
P2032	1-1/4" (31.8)	HG	0.16
P2032	1-1/4" (31.8)	SS	0.16
P2032	1-1/4" (31.8)	ST	0.16
P2032	1-1/4" (31.8)	AL	0.06
P2033	1-3/8" (34.9)	EG	0.17
P2033	1-3/8" (34.9)	HG	0.18
P2033	1-3/8" (34.9)	SS	0.17

Beam Clamps

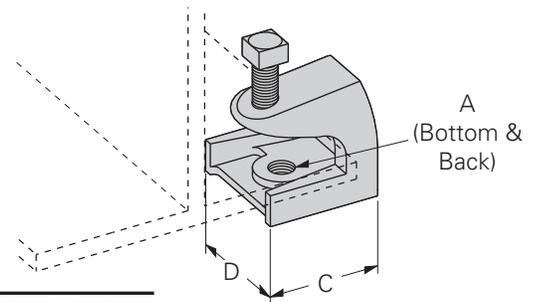
B3037Z Z-Purlin C-Clamp

- Design Load 500 Lbs. (2.22 kN)
- Safety Factor of 5
- Designed for attaching a 3/8"-16 hanger rod to the bottom flange of a Z-purlin
- Setscrew and locknut included
- Material: Malleable iron
- Standard finishes: ZN, PLN



B444 Series Rod Support

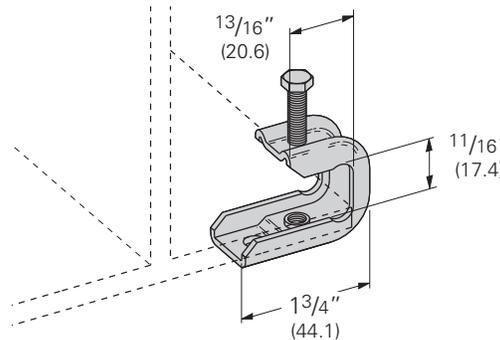
- Safety Factor of 5
- Max. Flange Thickness
3/4" (19.0) for 1/4 & 5/16 sizes
1" (25.4) for 3/8 & 1/2 sizes
- Setscrew included
- Material: Malleable iron
- Standard finish: ZN, available in HDG with CZ Hardware



Part No.	Thread Size A	Set Screw	C		D		Design Load		Wt./C	
			In.	mm	In.	mm	Lbs.	kN	Lbs.	kg
B444-1/4	1/4"-20	1/4"-20	1 3/8"	(34.9)	1 3/16"	(30.1)	150	(.66)	24	(10.9)
B444-5/16	5/16"-18	1/4"-20	1 3/8"	(34.9)	1 3/16"	(30.1)	150	(.66)	23	(10.4)
B444-3/8	3/8"-16	1/2"-13	1 7/8"	(47.6)	2"	(50.8)	350	(7.12)	65	(29.5)
B444-1/2	1/2"-13	5/8"-11	2 3/8"	(60.3)	2 1/2"	(63.5)	1000	(4.45)	132	(59.9)

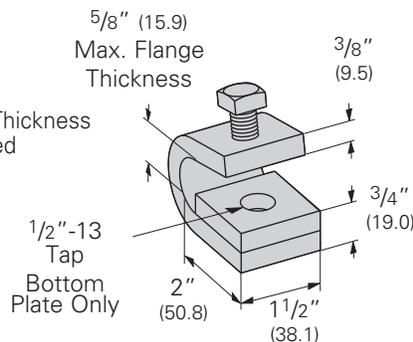
BC442 Light Duty Beam Clamp

- Design Load 75 Lbs. (.33 kN)
- Safety Factor of 5
- 1 1/16" (17.5) Max. Flange Thickness
- Setscrew included
- Holes tapped 1/4"-20 (Bottom & Back)
- Material: 13 Gauge (2.3)
- Standard finish: ZN
- Wt./C 13 Lbs. (3.9 kg)



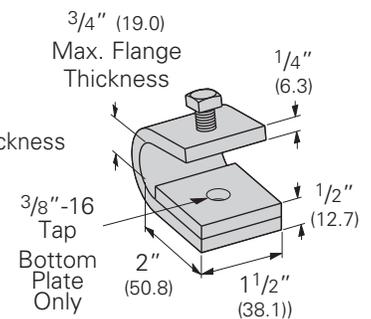
B210 Beam Clamp

- Design Load 800 Lbs. (3.56 kN)
- Safety Factor of 5
- 5/8" (15.9) Max. Flange Thickness
- 1/2"-13 Setscrew included
- Standard finish: ZN
- Wt./C 100 Lbs. (45.3 kg)



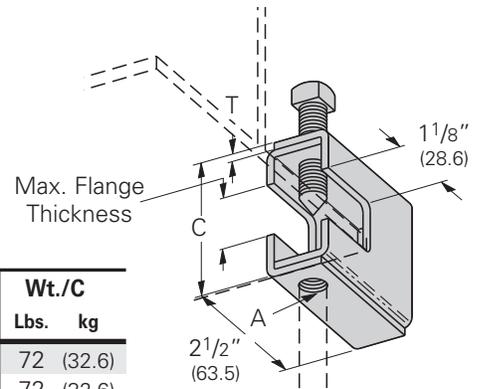
B210A Beam Clamp

- Design Load 300 Lbs. (1.33 kN)
- Safety Factor of 5
- 3/4" (19.0) Max. Flange Thickness
- 3/8"-16 Setscrew included
- Standard finish: ZN
- Wt./C 60 Lbs. (27.2 kg)



B303 thru B309 Beam Clamps

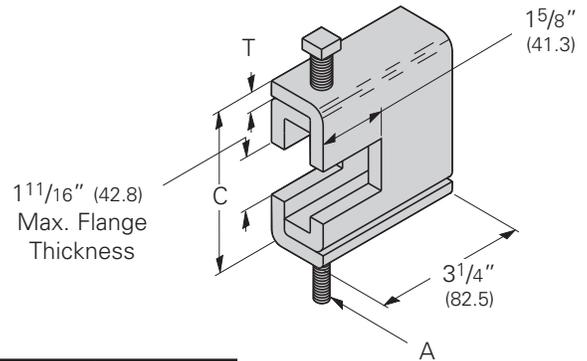
- Safety Factor of 5
- Max. Flange Thickness $1/16''$ (1.6) thru $7/8''$ (22.2)
- Setscrew included
- When Retaining Strap is required, order B312 separately
- Recommended Setscrew Torque: $3/8''$ -16 150 in-lbs. (16.9 N•m)
 $1/2''$ -13 350 in-lbs. (39.5 N•m)
- Standard finishes: ZN, HDG



Part No.	Thread Size A	Set Screw	C		D		Design Load		Wt./C	
			In.	mm	In.	mm	Lbs.	kN	Lbs.	kg
B303	$1/4''$ -20	$3/8''$ -16	$2^{5/16}''$	(58.7)	11 Ga.	(3.0)	400	(1.78)	72	(32.6)
B304	$5/16''$ -18	$3/8''$ -16	$2^{5/16}''$	(58.7)	11 Ga.	(3.0)	600	(2.67)	72	(32.6)
B305	$3/8''$ -16	$3/8''$ -16	$2^{5/16}''$	(58.7)	11 Ga.	(3.0)	600	(2.67)	72	(32.6)
B306	$3/8''$ -16	$1/2''$ -13	$2^{7/16}''$	(61.9)	7 Ga.	(4.5)	1100	(4.89)	97	(44.0)
B307	$1/2''$ -13	$1/2''$ -13	$2^{7/16}''$	(61.9)	7 Ga.	(4.5)	1100	(4.89)	97	(44.0)
B308	$1/2''$ -13	$1/2''$ -13	$2^{9/16}''$	(65.1)	$1/4''$	(6.3)	1500	(6.67)	133	(60.3)
B309	$5/8''$ -11	$1/2''$ -13	$2^{9/16}''$	(65.1)	$1/4''$	(6.3)	1500	(6.67)	133	(60.3)

B321 Series Beam Clamps

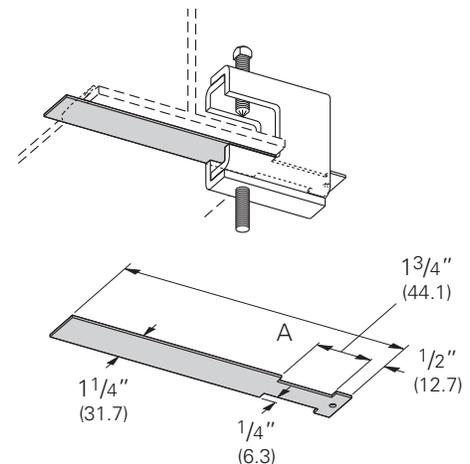
- Safety Factor of 5
- $1^{11/16}''$ (42.8) Max. Flange Thickness
- Setscrew included
- When Retaining Strap is required, order B312 separately
- Recommended Setscrew Torque: $1/2''$ -13 350 in-lbs. (39.5 N•m)
 $5/8''$ -11 700 in-lbs. (79.0 N•m)
- Minimum flange thickness: B321-1 thru B321-3 $1/4''$ (6.3)
B321-4 and B321-5 $3/8''$ (9.5)
- Standard finishes: ZN, HDG



Part No.	Thread Size A	Setscrew Size	C		D		Design Load		Wt./C	
			In.	mm	In.	mm	Lbs.	kN	Lbs.	kg
B321-1	$3/8''$ -16	$1/2''$ -13	$3^{9/16}''$	(92.1)	$1/4''$	(6.3)	1300	(5.78)	187	(84.8)
B321-2	$1/2''$ -13	$1/2''$ -13	$3^{9/16}''$	(92.1)	$1/4''$	(6.3)	1400	(6.23)	186	(84.3)
B321-3	$5/8''$ -11	$1/2''$ -13	$3^{9/16}''$	(92.1)	$1/4''$	(6.3)	1600	(7.12)	185	(83.9)
B321-4	$5/8''$ -11	$5/8''$ -11	$3^{23/32}''$	(94.4)	$5/16''$	(7.9)	1800	(8.00)	239	(108.4)
B321-5	$3/4''$ -10	$5/8''$ -11	$3^{23/32}''$	(94.4)	$5/16''$	(7.9)	2000	(8.89)	238	(107.9)

B312 Series Retaining Strap for use with B303 thru B309 and B321 Series

- $3/4''$ (19.0) Max. Flange Thickness
- For thicker beams, step up one flange width size
- Material: 14 Gauge (1.9)
- Standard finishes: GALV, HDG



Part No.	For Flange Width		A		Wt./C	
	In.	mm	In.	mm	Lbs.	kg
B312-6	6"	(152.4)	9"	(228.6)	22	(10.0)
B312-9	9"	(228.6)	12"	(304.8)	30	(13.6)
B312-12	12"	(304.8)	15"	(381.0)	40	(18.1)
B312-15	15"	(381.0)	18"	(457.2)	49	(22.2)

Reference page 113 for general fitting and standard finish specifications.



Components

1. A hard plastic inner core that measures 1.5" in length with a .50 inch bore, a .75 inch outside diameter and 4 lugs that extend to .84 inches.
2. A plastic sleeve that has a .75 inch inside diameter and a .80 inch outside diameter
3. A 1/4 -20 x 1/2 rubber insulated brass rivet nut
4. A stainless steel 1/4-20 x1" bolt

Port assembly



Installation

Warning: Installation requires the use of concrete drilling equipment. The installer must be familiar with and follow all safety procedures required for the use of such equipment including but not limited to the use of hearing and eye protection.

Port assembly



1. Select the area to drill the hole for the port. The contractor should make every effort to determine the the selected area is free of any utilities or pipes in or under the selected point. In addition the use of a drill interrupter such as the Protek11 is highly recommended .

2. Drill a 20MM (.79") hole through the concrete and clean all dust and debris from both in and around the hole with a commercial vacuum equipped with a HEPA filter.

3. Insert the port assembly into the clean hole and using a dead blow hammer and the driver tool drive the assembly into floor to a point where the top of the bolt is flush with the surface of the floor. The port is now ready to use.

Rubber insulated nut



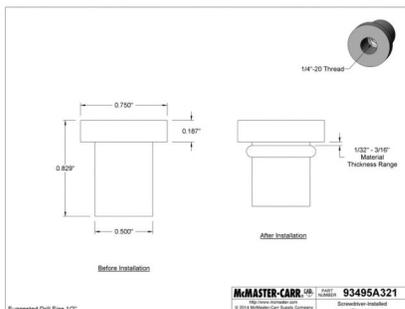
* A 3/4" bit may also be used for step #2. Use 20mm diamond hole bit to clean/bore after 3/4" hole is drilled.

Sidewalk bolt and over-sized washer included if flush floor mount is needed.

Protek 11 Drill Interrupter



Rubber insulated nut





Environmental System and Site Monitoring Sensor Platform

1,000 Foot Range with 10+ Year Battery Life

Superior Wireless Range

1,000 + ft. line of sight up to 10-12 walls*

Long Battery Life

10+ Years when Powered by 2 AA batteries*

Onboard Data Memory

Stores up to 512 readings per sensor.***

Future Proof

Over-the-air updates allow products to be updated remotely.

Low Cost Monthly Fees

Plans begin at \$13.25 per month for up to 6 sensors



OVER 50 DIFFERENT SENSORS

Temp, CO, CO2, H2S, PM2.5, Pressure, 0-10V, 4-20ma



4 Different Wireless Gateways

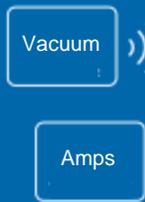
Accept 100 Wireless Sensor Inputs.



Works with Obar Instrument Gauges

Multiple gauges to choose from or use any 0-10 volt sensor to collect data.

Wireless Sensors



Wireless Gateway



Online Monitoring and Alerts



Scan Code to
Download Obar APP



* Wireless range may vary according to environment
** Battery life determined by sensor reporting & other variables.
*** 10 minute heartbeats= 3.5 days/ 2 hour heartbeats = 42 days

GBR 25 Mini Digital Differential Pressure Gauge With Alarm

System alarms and monitoring made simple and affordable.

Finally a product that has what you need and can be easily installed.

The GBR 25 is a compact stand alone system gauge with an audible and visual alarm that works for VOC and Radon systems operating at system pressures greater than 2" wc. Included is a second relay that can be used to trigger additional alarms.

Includes Power supply

Optional 4-20 MA or 0-10 outputs can be used to monitor system pressure.

Contact OBAR for a quote to build custom alarm panels for your needs.

Applications and features

- Scale 0-40 inches WC eliminates need for multiple gauges.
- Visual and audible alarm included and factory set at 1" WC
The alarm set point can be changed in the field.
- Second adjustable relay for triggering additional alarms.
- Optional 4-20 MA or 0-10 output for data.
- Accuracy is up to $\pm 1\%$ FS, with large LCD display.
- Function keys: zero reset, units select, display update time, automatic sleep time, alarm, etc.

Specifications

Medium: Non-combustible, non-corrosive air, insensitive to moisture, dust, condensation and oil

Working Temp.: 20~70°C

Medium Temp.: 0~60°C

Temp. Compensation: 0~50°C

Working Pressure: overload 10xFS, burst 15xFS

Display: 5 bits LCD, with engineering unit & backlight

Output: 0-10V / 4-20mA (3 wires)

Output load: $\leq 500\Omega$ (current), $\geq 2K\Omega$ (voltage)

Relay Output: 2xSPST, 3A/30VDC, 3A/250VAC or 1xBuzzer

Accuracy: up to $\pm 1.0\%$ FS ($\pm 2.0\%$ FS@25Pa range)

Long term stability: $\pm 0.5\%$ FS /Year

Thermal effect: $< 0.05\%$ FS/°C (zero), $< 0.08\%$ FS/°C(FS)

Power type 16~28VDC/AC

24V Power Supply included

Process Connection: 5mm ID tubing, two pairs (left/back)

Keys: 3 touch buttons

Protection: IP54

Approval: CE

Display update time: selectable for 0.5/1/5/10s (default 1s)



Related Products

EDG Wireless Gateway and Sensors



Installation Guide for GBR 25T and EDG 0-10 Sensor

The GBR 25T has all the features of the GBR 25 and has both 0-10V and 4-20ma output. Pair this gauge with the OBAR EDG 0-10v Wireless Sensor and EDG Gateway so you can view and save your system data and manage your text and email alerts.



Warning

All wiring should be done with the Power OFF to the system gauge. Make sure the EDG 0-10V sensor is wired to the correct polarity on the gauge terminals. Failure to wire correctly will result in damage to the sensor.

1. Mount the GBR25 gauge.
2. Mount the EDG 0-10V Sensor. If you are installing multiple EDG Sensors they must be a minimum of 4' apart and 10' from the EDG Gateway
3. Make sure the power is off to the GBR 25 gauge.
4. Connect the 2 wires from the 0-10V sensor to the terminal block on the GBR25 Gauge making sure the polarity is correct.
5. Power up the GBR25 Gauge
6. Follow the directions for the EDG Sensor installation for activation of the sensor network.

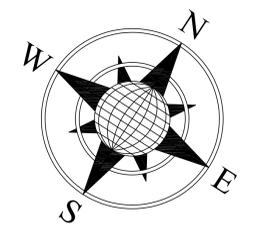
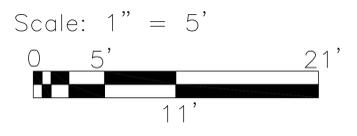
Related Products



Attachment 2
PID Readings Collected During
Communication Test

LEGEND:

- SUCTION POINT
- × TEST POINT
- ⊠ INTERIOR COLUMN
- ⊗ INTERIOR COLUMN



Note re:effluent monitoring: a PID was used to screen the treated effluent at each tested location (S1 through S3). All PID readings were 0.0 ppm.

Note re: PID readings at T-9 to T-14: PID readings were not collected from test points T-9 through T-14 as these locations had been sealed by the time the PID readings were collected.

Note re: PID reading collection: PID readings were collected from test points after the communication test was performed and the sub-slab air had been evacuated.

Basement

(All readings collected after testing was completed.)

Slab on Grade



REV:	DESCRIPTION:	BY:	DATE:

OBAR SYSTEMS, INC.
2909 NJ 23, Newfoundland, NJ, 07435



SITE: 127 12th Street
Brooklyn, New York
Block 1020, Lot 52

DATE:	8/8/2025	DRAWN:	SM
SHEET #:	SSD-1	SHEET NAME:	Diagnostic Map
		SHEET SIZE:	ARCH E1

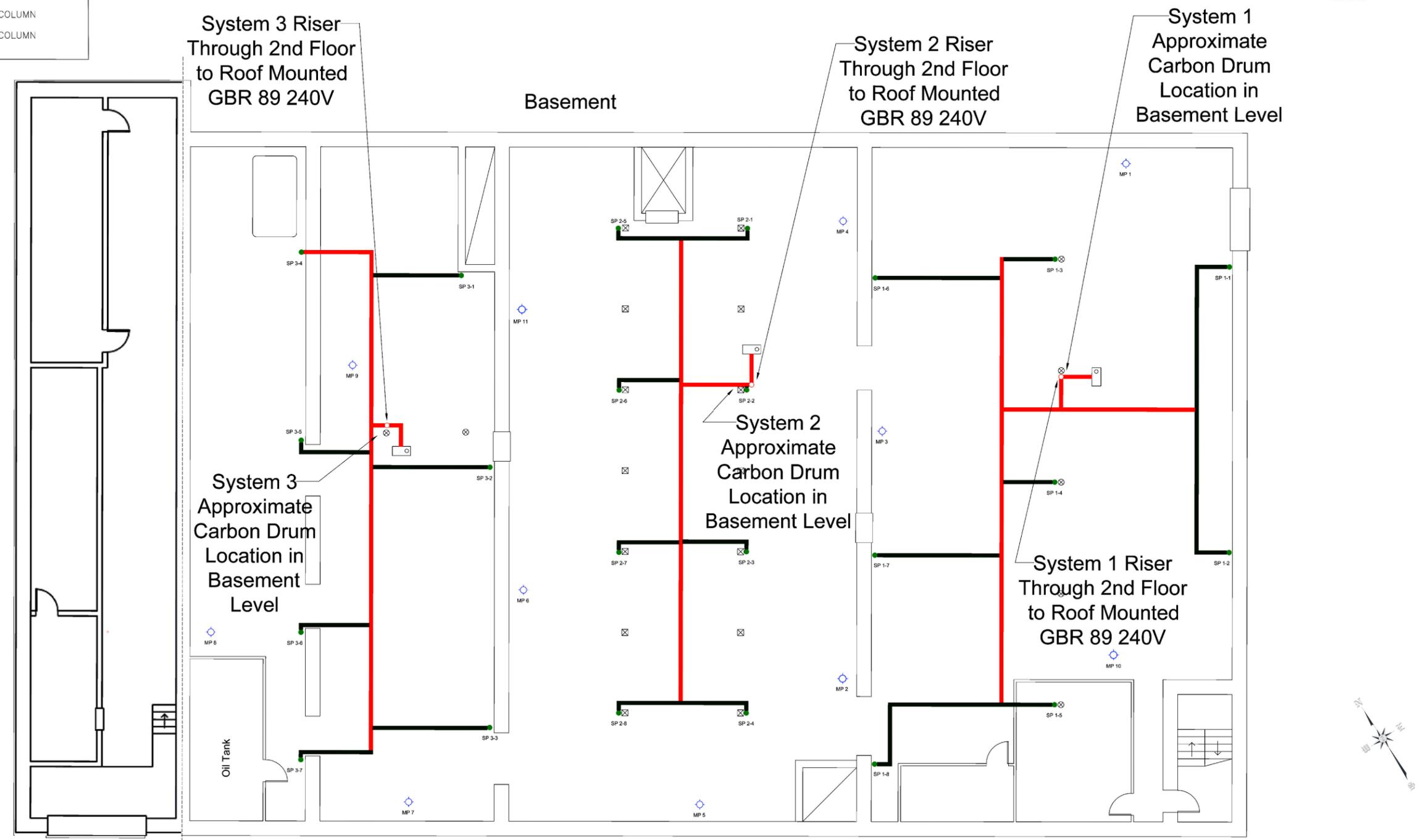
Attachment 3

SSDS Design and Details

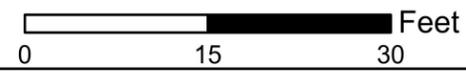


- LEGEND:**
- 3" SUCTION POINT
 - 4" SUCTION POINT
 - OVERHEAD 4" PIPE
 - OVERHEAD 3" PIPE
 - MITIGATION BLOWER
 - ◇ MONITORING TEST PORT
 - ⊠ INTERIOR COLUMN
 - ⊗ INTERIOR COLUMN

Slab on Grade



Reference:
Obar Systems, Inc. Newfoundland, NJ, System Design - 127 12 Street, Brooklyn, NY, Sheet SSD-3, 10/23/2025

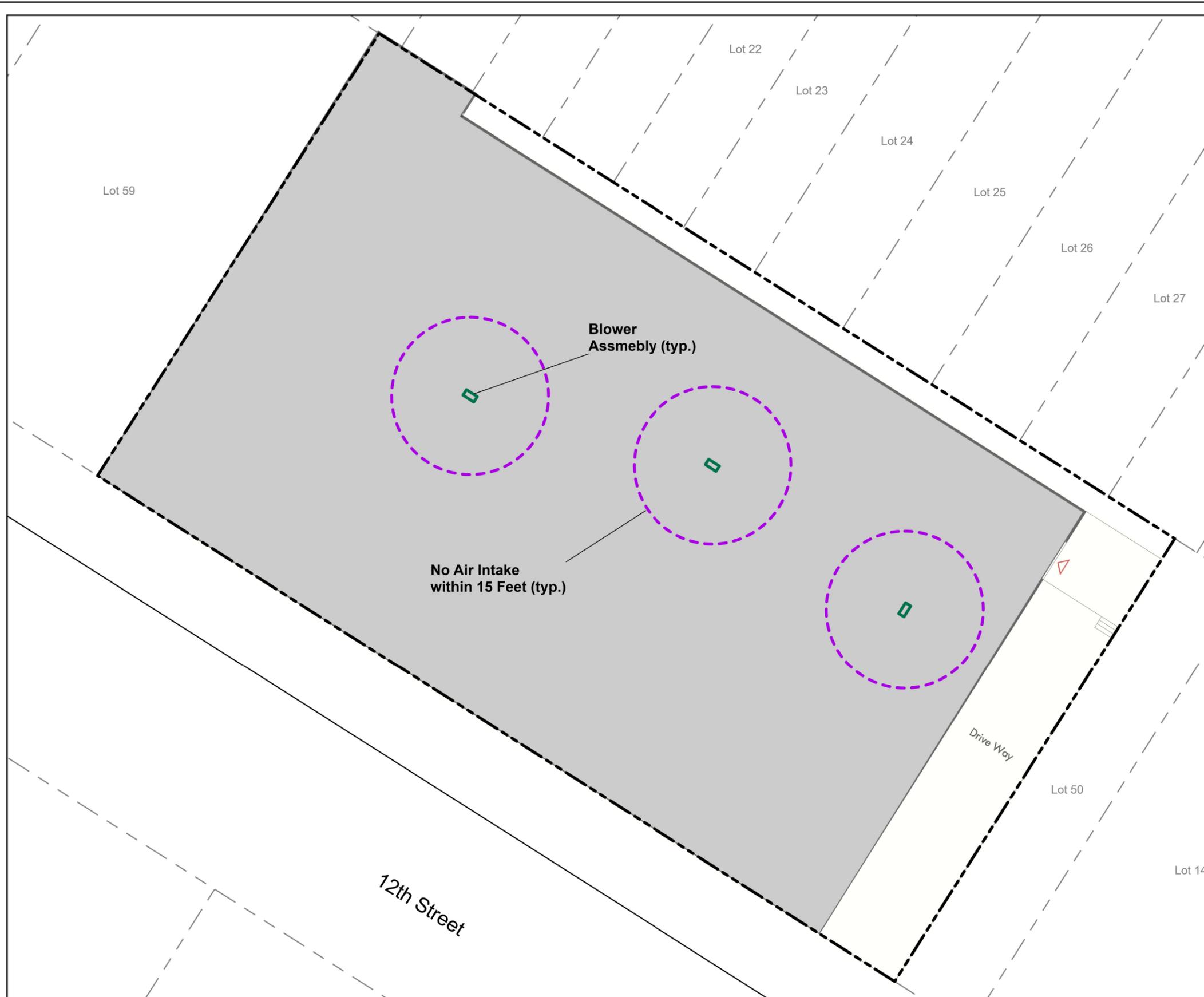


127 12th Street
Brooklyn, New York
Block 1020, Lot 52

Matthew M. Carroll, PE
1085 Sackett Avenue
Bronx, NY 10461

Drawn By	LM
Checked By	MC
Date	February 2026
Scale	As Noted

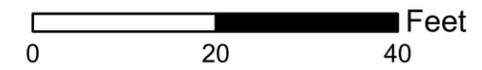
Drawing Title	SSDS Layout
Drawing No.	X-100



Legend

-  Blower Assembly
-  No Air Intake within 15 Feet
-  Site Boundary
-  NYC Tax Lots

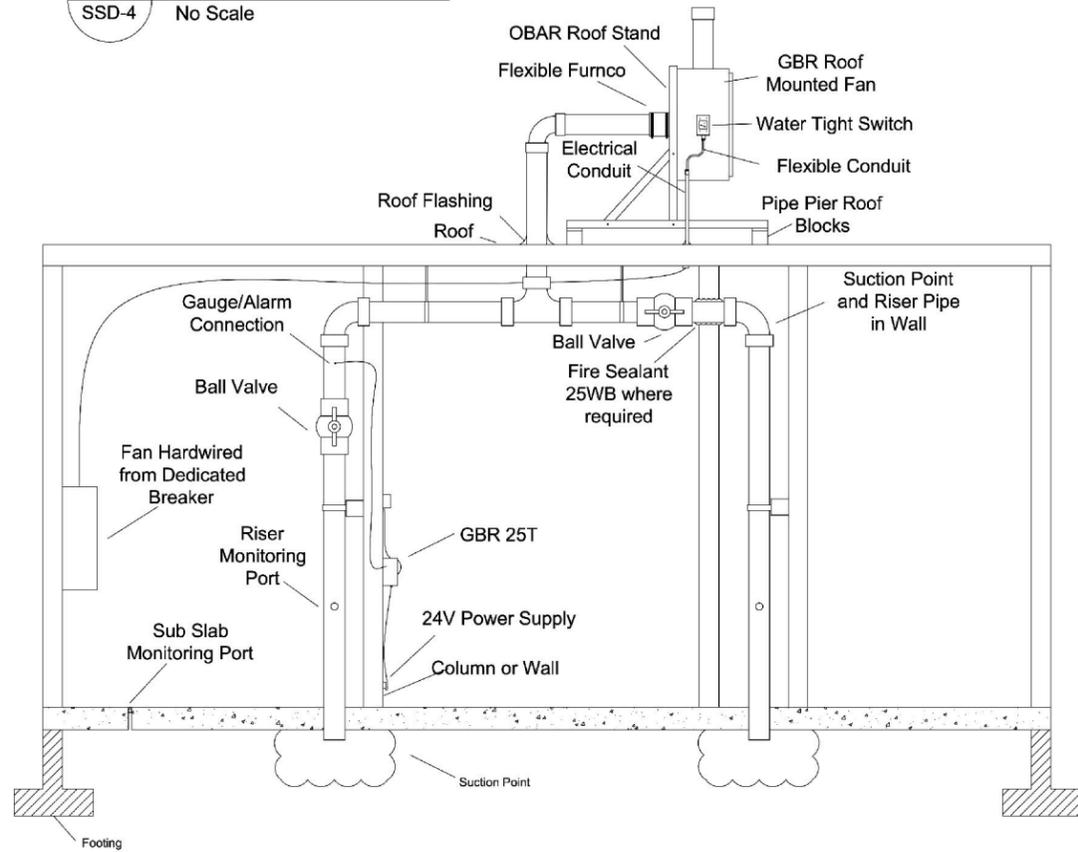
Note:
A vapor treatment system will be installed to treat blower effluent prior to exhausting into the atmosphere.



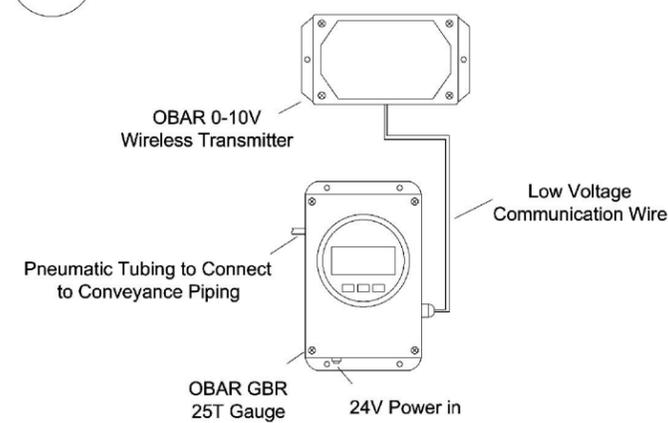
Reference:
Floor Plan: TERRACRG Commercial Realty Group
Parcel Boundaries: Contributing counties, NYS Office of Information Technology Services GIS Program Office (GPO) and NYS Department of Taxation and Finance's Office of Real Property Tax Services (ORPTS).

<p>127 12th Street Brooklyn, New York Block 1020, Lot 52</p>	
<p>Matthew M. Carroll, PE 1085 Sackett Avenue Bronx, NY 10461</p>	
<p>Drawn By LM</p>	<p>Checked By MC</p>
<p>Date January 2026</p>	<p>Scale As Noted</p>
<p>Drawing Title SSDS Discharge Location</p>	
<p>Drawing No. X-101</p>	

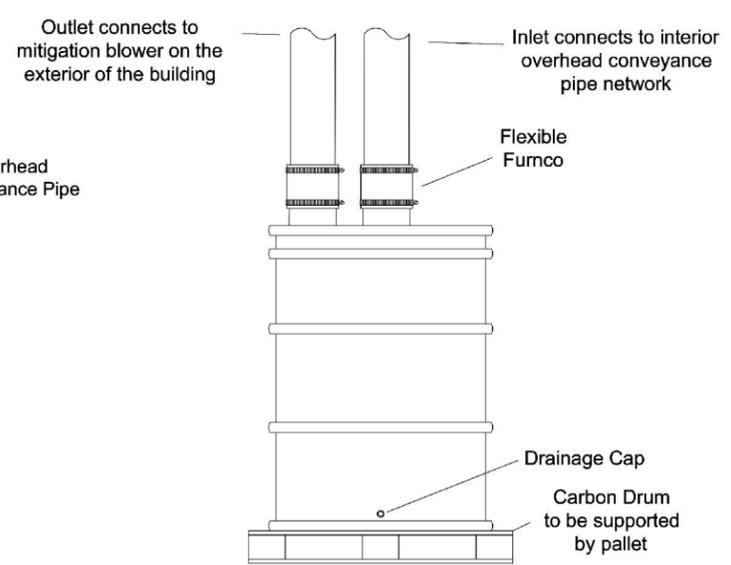
1 System Section View
SSD-4 No Scale



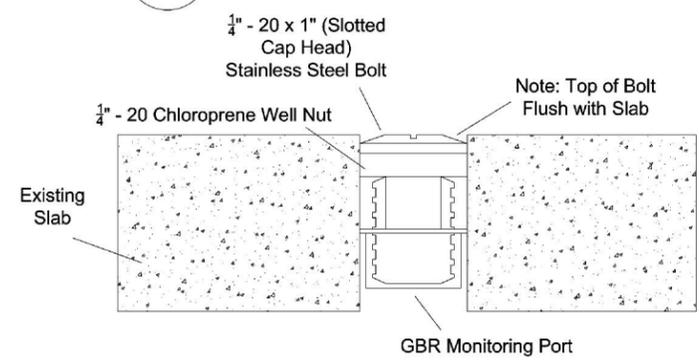
2 GBR 25T Paired to 0-10V Transmitter
SSD-4 No Scale



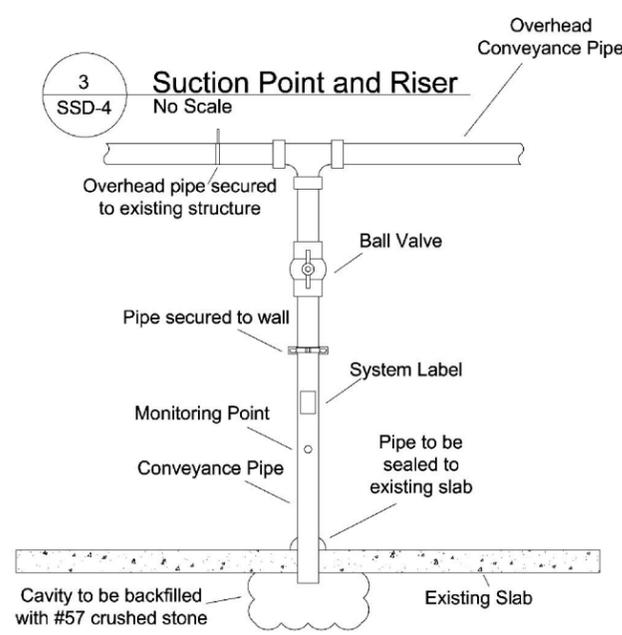
5 55 Gallon GAC Drum Detail
SSD-4 No Scale



4 GBR Monitoring Port
SSD-4 No Scale



3 Suction Point and Riser
SSD-4 No Scale



127 12th Street
Brooklyn, New York
Block 1020, Lot 52

Matthew M. Carroll, PE
1085 Sackett Avenue
Bronx, NY 10461

Drawn By	LM
Checked By	MC
Date	August 2025
Scale	As Noted

SSDS Details

X-102

Reference:
Obar Systems, Inc. Newfoundland, NJ, System Details - 127 12 Street, Brooklyn, NY, Sheet SSD-4, 8/26/2025

Attachment 4

SSDS Component Specification Sheets

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.

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.



GBR89 WITH ROOF MOUNT

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 26 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

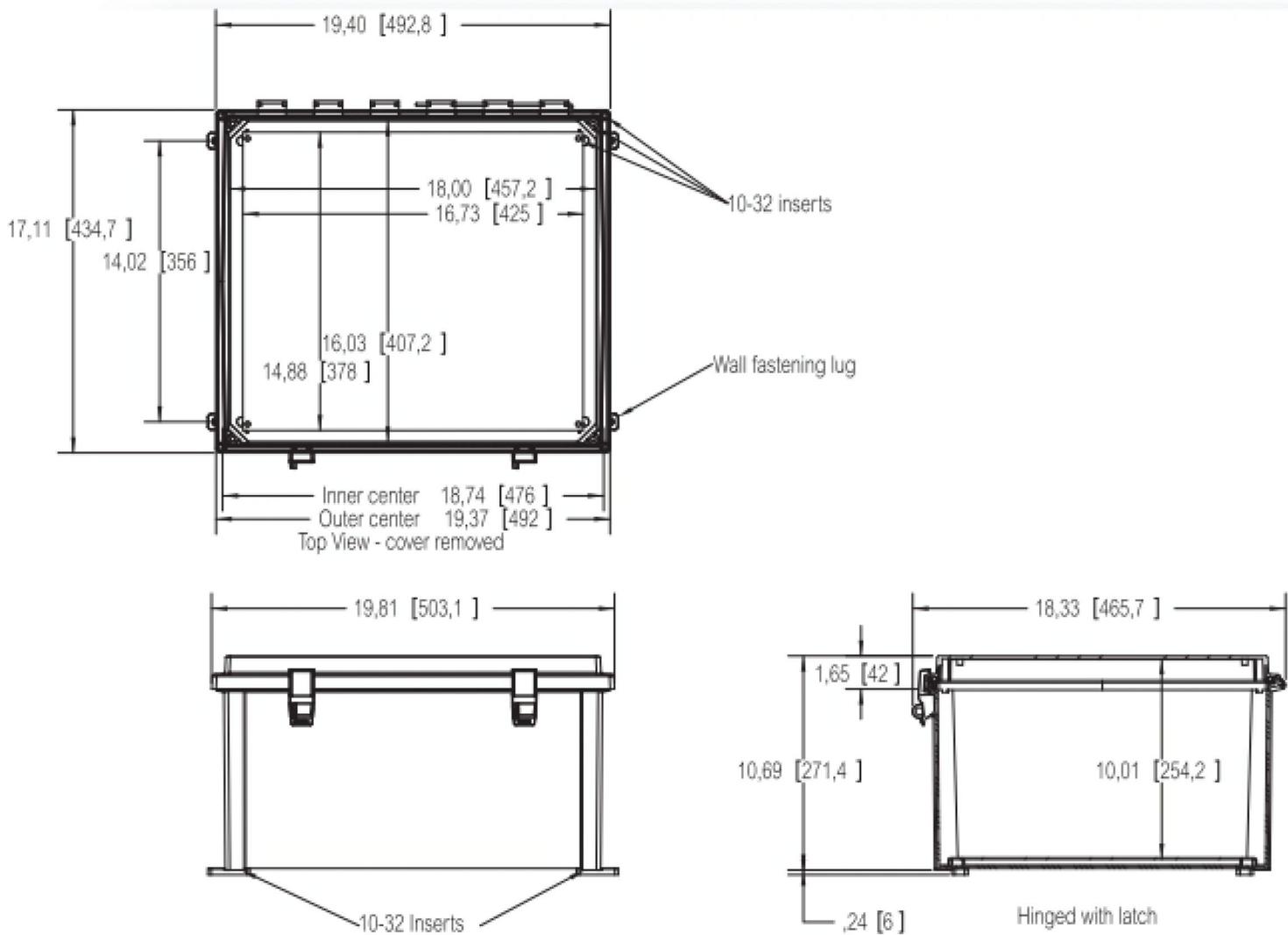
UV resistance: UL 508

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

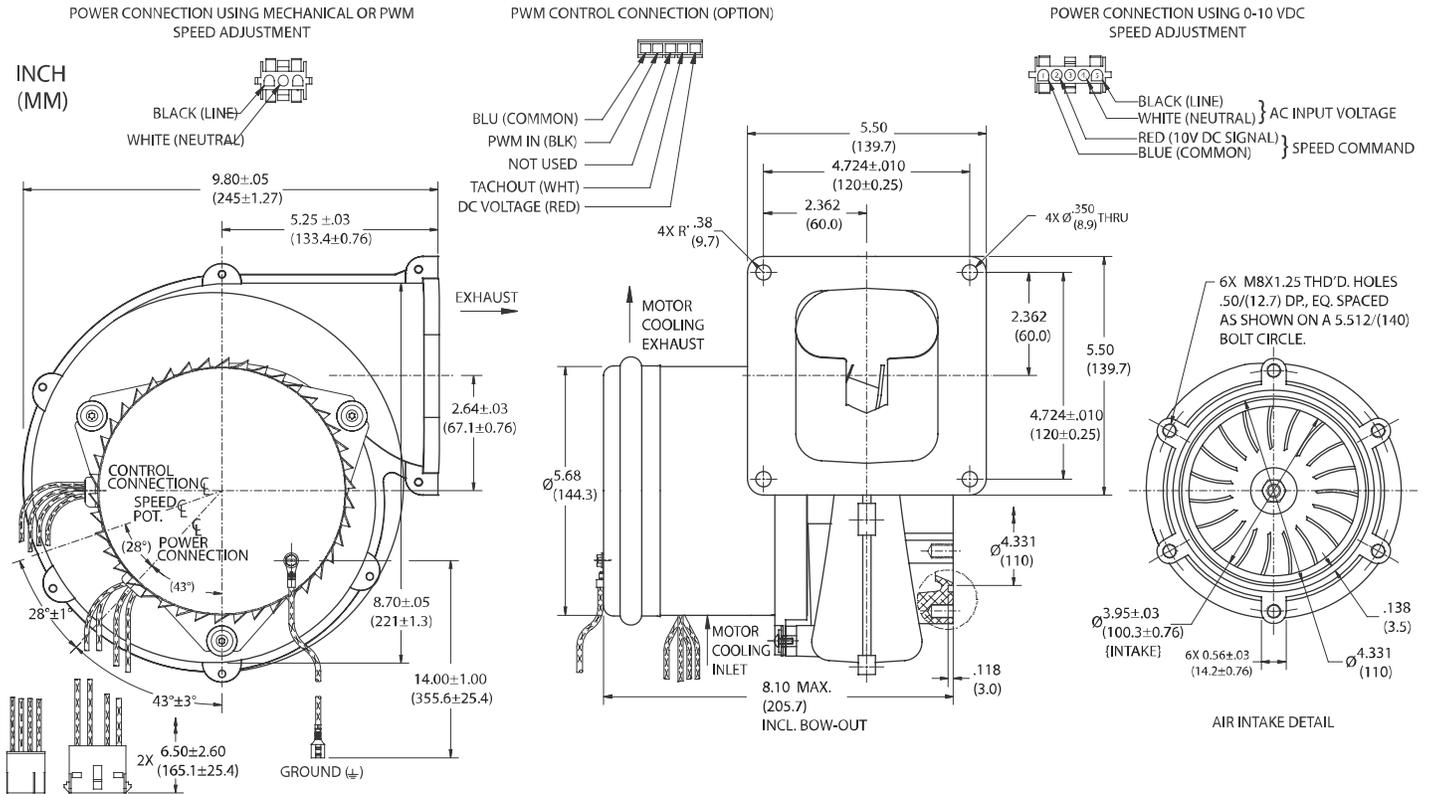


High Voltage Brushless DC Blowers

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

240 Volt AC Input, Single Phase, High Output

Nautilair



		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.

This document is for informational purposes only and should not be considered as a binding description of the products or their performance in all applications. The performance data on this page depicts typical performance under controlled laboratory conditions. AMETEK is not responsible for blowers driven beyond factory specified speed, temperature, pressure, flow or without proper alignment. Actual performance will vary depending on the operating environment and application. AMETEK products are not designed for and should not be used in medical life support applications. AMETEK reserves the right to revise its products without notification. The above characteristics represent standard products. For product designed to meet specific applications, contact AMETEK Technical & Industrial Products Sales department.

AMETEK TECHNICAL & INDUSTRIAL PRODUCTS

627 Lake Street, Kent OH 44240

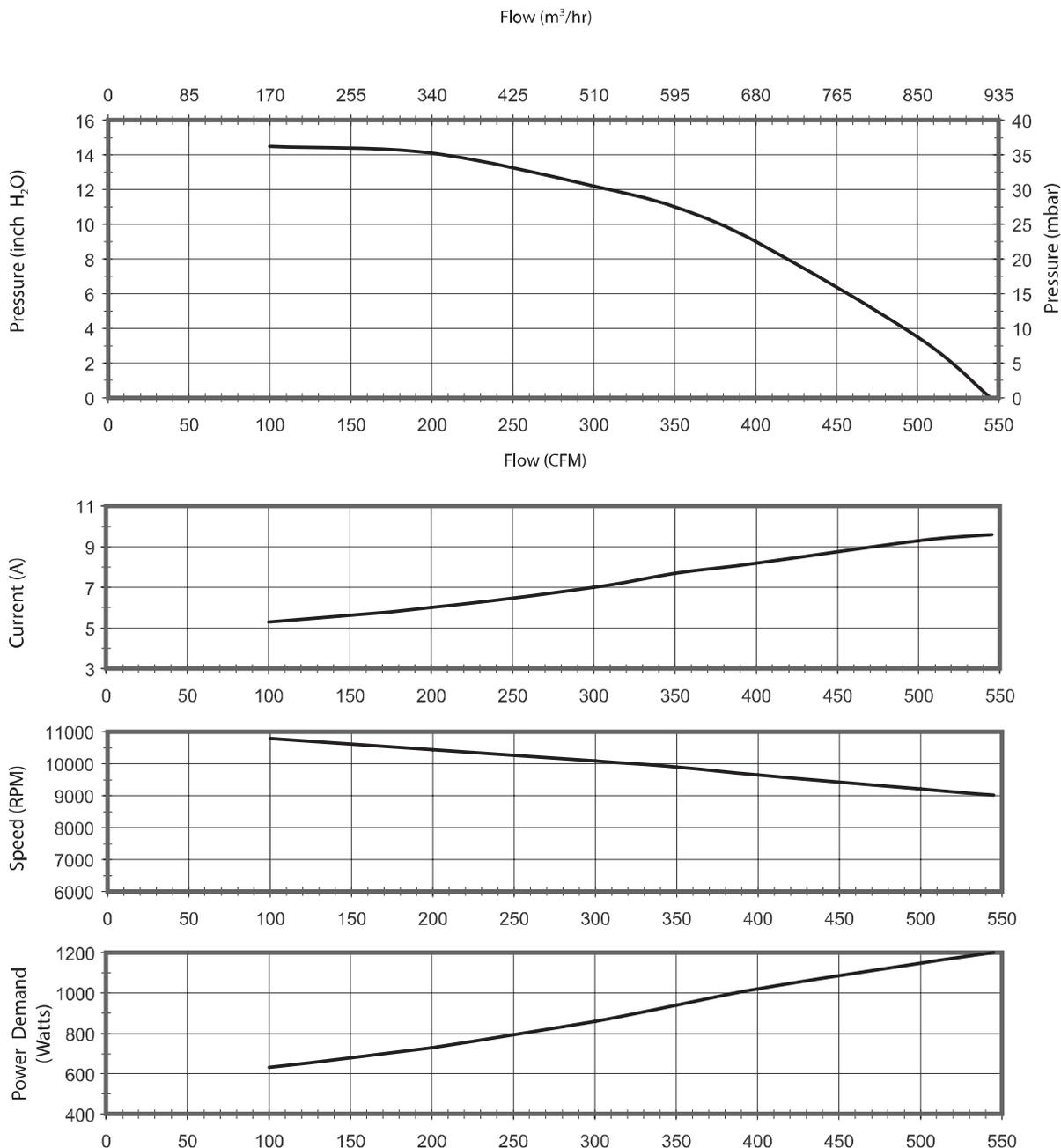
USA: +1 215-256-6601 - Europe: +44 (0) 845 366 9664 - Asia: +86 21 5763 1258

www.ametektip.com

B 47

AMETEK
PRECISION MOTION CONTROL

Typical Performance



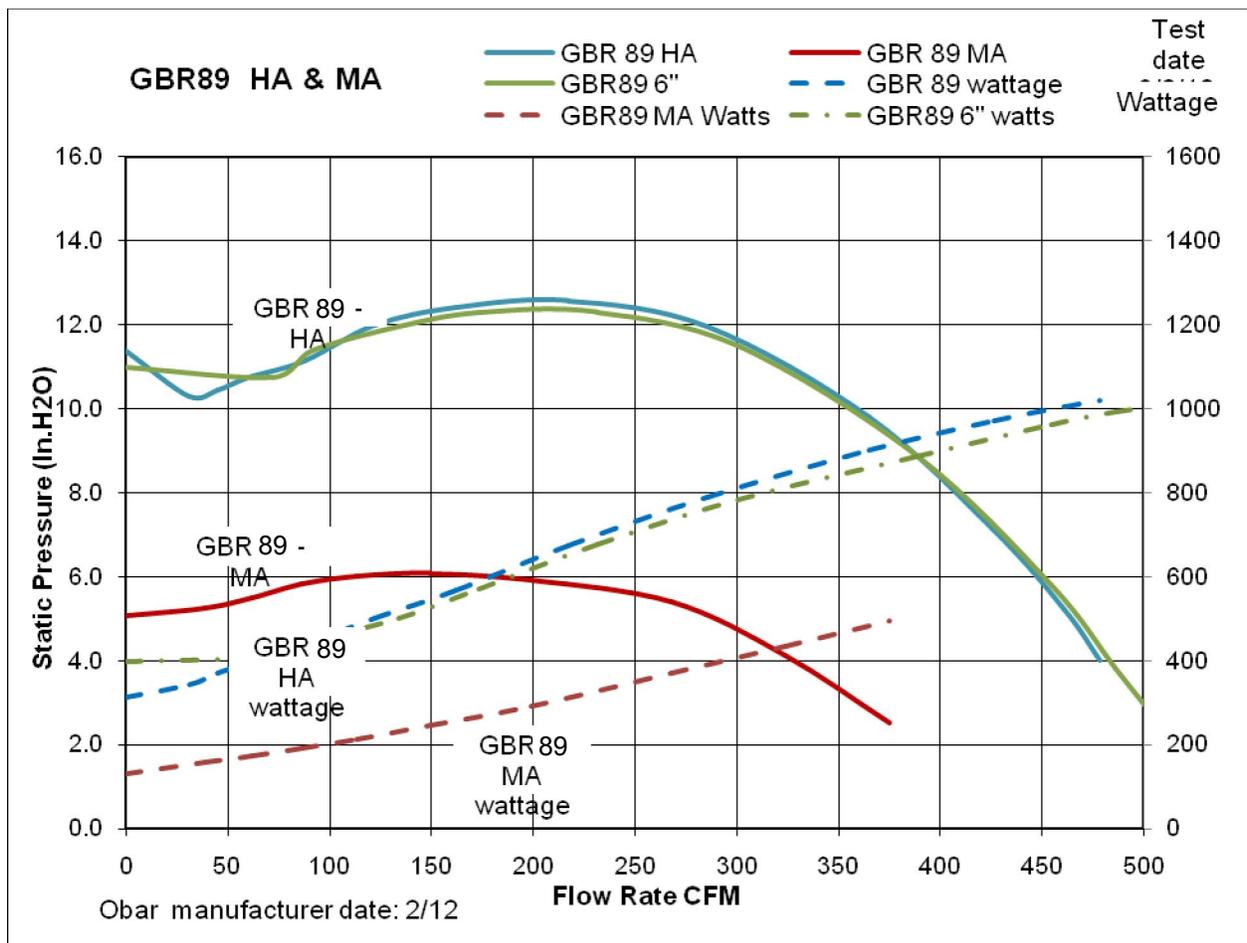
Data presented represents blower performance at STANDARD AIR DENSITY, .075 lb/ft³ (29.92" Hg, Sea Level, 68° F)
 Vacuum performance available upon request.

This document is for informational purposes only and should not be considered as a binding description of the products or their performance in all applications. The performance data on this page depicts typical performance under controlled laboratory conditions. AMETEK is not responsible for blowers driven beyond factory specified speed, temperature, pressure, flow or without proper alignment. Actual performance will vary depending on the operating environment and application. AMETEK products are not designed for and should not be used in medical life support applications. AMETEK reserves the right to revise its products without notification. The above characteristics represent standard products. For product designed to meet specific applications, contact AMETEK Technical & Industrial Products Sales department.

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

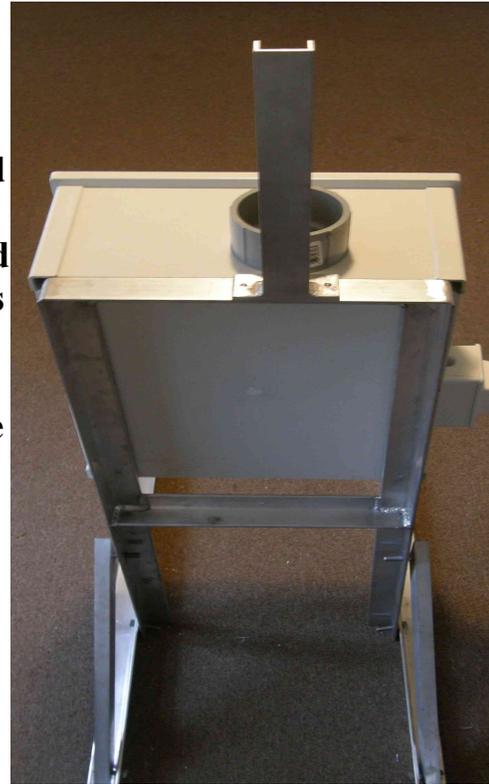
Maximum airflow with no exhaust piping and 8' of 6" piping is 529 CFM

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



GBR ROOF MOUNT

The GBR Roof Mount is designed for the GBR series fans but can be adapted to accept other fans such as the Fantech HP series. Constructed of 3/16 x 1 1/2 welded aluminum with stainless hardware the mount is ready for installation and does not require painting. . The mount measures 36" high, 17" wide and has a base of 40" x 17". There is an additional 12" extension to secure the discharge. The mount can be used with Pipe Pier mounts or fastened directly to curbing or other common supports.



GBR FAN MOUNT WITH GBR76 FAN



GBR FAN MOUNT WITH FANTECH ADAPTER



GBR FAN MOUNT WITH FANTECH FAN



Cast Iron Soil Pipe Suggested Short Form Specification

Hubless Cast Iron Soil Pipe and Fittings:

Hubless Cast Iron pipe and fittings shall be manufactured from gray cast iron and shall conform to ASTM A 888 and CISPI Standard 301. All pipe and fittings shall be marked with the collective trademark of the Cast Iron Soil Pipe Institute  and listed by NSF® International. Hubless Couplings shall conform to CISPI Standard 310, shall be manufactured in the United States, and be certified by NSF® International. Heavy Duty couplings shall conform to ASTM C 1540, shall be manufactured in the United States, and shall be used if indicated. Gaskets shall conform to ASTM C 564. All pipe and fittings to be produced by a single manufacturer and are to be installed in accordance with manufacturer's recommendations and applicable code requirements. Couplings shall be installed in accordance with the manufacturer's band tightening sequence and torque recommendations. Tighten bands with a properly calibrated torque limiting device. The system shall be hydrostatically tested after installation to 10 ft. of head (4.3 psi maximum). **WARNING!** Never test with or transport/store compressed air or gas in Cast Iron pipe or fittings. Doing so can result in explosive failures and cause severe injury or death.

Hub and Spigot Cast Iron Soil Pipe and Fittings:

Hub and Spigot Cast Iron pipe and fittings shall be manufactured from gray cast iron and shall conform to ASTM A 74. All pipe and fittings shall be marked with the collective trademark of the Cast Iron Soil Pipe Institute  and listed by NSF® International.

Pipe and fittings to be [pick one or both]:

- Service (SV) or
- Extra Heavy (XH)

Joints can be made using a compression gasket manufactured from an elastomer meeting the requirements of ASTM C 564 or lead and oakum. All pipe and fittings to be produced by a single manufacturer and are to be installed in accordance with manufacturer's recommendations and applicable code requirements. The system shall be hydrostatically tested after installation to 10 ft. of head (4.3 psi maximum). **WARNING!** Never test with or transport/store compressed air or gas in Cast Iron pipe or fittings. Doing so can result in explosive failures and cause severe injury or death.

SUBMITTAL FOR CHARLOTTE PIPE® HUBLESS CAST IRON SOIL PIPE AND FITTINGS

Date: _____

Job Name: _____

Location: _____

Engineer: _____

Contractor: _____

► Scope:

This specification covers Hubless Cast Iron pipe, fittings, and couplings used in sanitary drain, waste and vent (DWV), sewer, and storm drainage applications. This system is intended for use in non-pressure applications.

► Specification:

Hubless Cast Iron pipe and fittings shall be manufactured from gray cast iron and shall conform to ASTM A 888 and CISPI Standard 301. All pipe and fittings shall be marked with the collective trademark of the Cast Iron Soil Pipe Institute®  and listed by NSF® International. Hubless Couplings shall conform to CISPI Standard 310, shall be manufactured in the United States, and be certified by NSF® International. Heavy Duty and Medium Duty couplings shall conform to ASTM C 1540, shall be manufactured in the United States, and shall be used if indicated.

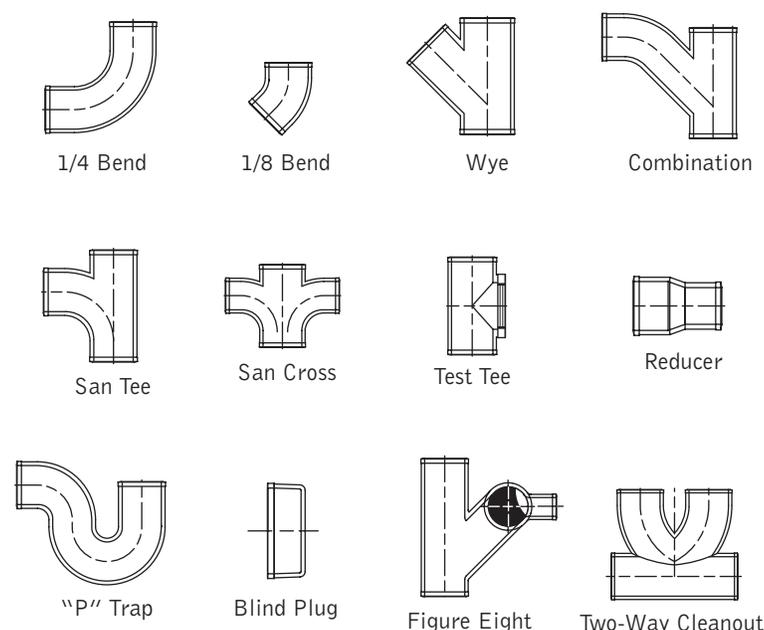
► Installation:

Installation shall comply with the latest installation instructions published by Charlotte Pipe and Foundry Company® and shall conform to all applicable plumbing, fire, and building code requirements. The system shall be hydrostatically tested after installation to 10 ft. of head (4.3 psi maximum). **WARNING!** Never test with or transport/store compressed air or gas in Cast Iron pipe or fittings. Doing so can result in explosive failures and cause severe injury or death.

► Referenced Standards:

- ASTM C 564: Rubber Gaskets for Cast Iron Soil Pipe and Fittings
- CISPI 301: Hubless Cast Iron Soil Pipe and Fittings
- CISPI 310: Hubless Couplings for Cast Iron Soil Pipe and Fittings
- ASTM C 1277: Hubless Couplings
- ASTM C 1540: Hubless Medium Duty and Heavy Duty Couplings





Not all fitting patterns shown

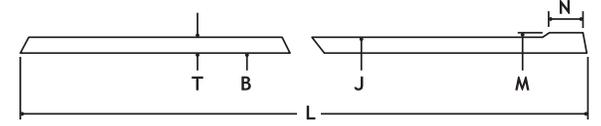


TABLE 1
DIMENSIONS AND TOLERANCES (IN INCHES) OF SPIGOTS
AND BARRELS FOR NO-HUB PIPE AND FITTINGS

Size	Inside Barrel Diameter	Outside Diameter Barrel	Outside Diameter Spigot	Width Spigot Bead N	Thickness of Barrel		Gasket Positioning Lug
	B	J	M	(± .13)	T-Nom.	T-Min.	W
1 1/2	1.50 ± .09	1.90 ± .06	1.96 ± .06	.25	.16	.13	1.13
2	1.96 ± .09	2.35 ± .09	2.41 ± .09	.25	.16	.13	1.13
3	2.96 ± .09	3.35 ± .09	3.41 ± .09	.25	.16	.13	1.13
4	3.94 ± .09	4.38 ± .09	4.44 ± .09	.31	.19	.15	1.13
5	4.94 ± .09	5.30 ± .09	5.36 ± .09	.31	.19	.15	1.50
6	5.94 ± .09	6.30 ± .09	6.36 ± .09	.31	.19	.15	1.50
8	7.94 ± .13	8.38 ± .09	8.44 ± .09	.31	.23	.17	2.00
10	10.00 ± .13	10.56 ± .09	10.62 ± .09	.31	.28	.22	2.00
12	11.94 ± .09	12.50 ± .13	12.62 ± .13	.31	.28	.22	2.75
15	15.11 ± .09	15.83 ± .13	16.12 ± .13	.31	.36	.30	2.75

Note: Charlotte Pipe does not recommend or warrant installations joined with unshielded hubless couplings.

Charlotte Pipe and Foundry Company • P.O. Box 35430 Charlotte, NC 28235 • (800) 438-6091 • www.charlottepipe.com

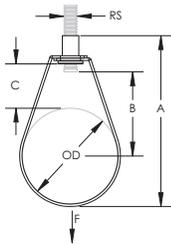
Charlotte Pipe and Charlotte Pipe and Foundry Company are registered trademarks of Charlotte Pipe and Foundry Company.

115 Standard Duty Loop Hanger



The 115 Standard Duty Loop Hanger is ideal for suspending stationary, non-insulated pipe lines, including CPVC pipes, in fire sprinkler systems. A knurled insert nut helps simplify vertical adjustments and flared edges on the base (1/2" to 4" sizes) help protect pipes from coming into contact with any sharp edges of the hanger.

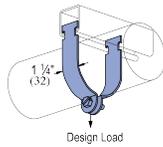
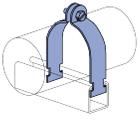
- Flared edges help prevent any sharp surfaces from coming into contact with the pipe (1/2" to 4" sizes)
- Retained insert nut helps ensure the loop hanger and insert nut stay together
- Recommended for the suspension of stationary non-insulated pipe lines
- Manufactured to use the minimum rod size permitted by NFPA® for fire sprinkler piping
- Conforms with Federal Specification WW-H-171 (Type 10), Manufacturers Standardization Society (MSS) SP-58 (Type 10)



Material: Steel
Finish: Pregalvanized



Part Number	Pipe Size	Outer Diameter OD	Rod Size RS	A	B	C	Static Load F	Certifications
1150050EG	1/2"	0.840"	3/8"	2 13/16"	1 1/8"	1"	300 lb	cULus
1150075EG	3/4"	1.050"	3/8"	3"	1 3/16"	15/16"	300 lb	cULus, FM
1150100EG	1"	1.315"	3/8"	3 1/4"	1 3/8"	15/16"	300 lb	cULus, FM
1150125EG	1 1/4"	1.660"	3/8"	3 9/16"	1 1/2"	15/16"	300 lb	cULus, FM
1150150EG	1 1/2"	1.900"	3/8"	3 13/16"	1 5/8"	15/16"	300 lb	cULus, FM
1150200EG	2"	2.375"	3/8"	4 1/4"	1 7/8"	15/16"	300 lb	cULus, FM
1150250EG	2 1/2"	2.875"	3/8"	5 15/16"	3 7/16"	2"	525 lb	cULus, FM
1150300EG	3"	3.500"	3/8"	6 9/16"	3 1/2"	1 15/16"	525 lb	cULus, FM
1150350EG	3 1/2"	4.000"	3/8"	7 1/16"	3 3/4"	1 15/16"	585 lb	cULus, FM
1150400EG	4"	4.500"	3/8"	7 9/16"	4"	1 15/16"	650 lb	cULus, FM
1150500EG	5"	5.563"	1/2"	9 13/16"	4 3/4"	2 1/4"	1,000 lb	cULus, FM
1150600EG	6"	6.625"	1/2"	11 5/16"	6 5/16"	3 5/16"	1,000 lb	cULus, FM
1150800EG	8"	8.625"	1/2"	12 7/8"	6 7/8"	2 7/8"	1,000 lb	cULus, FM



Material:

- The steel meets or exceeds the physical properties of ASTM A1011 GR 33, except with SS, ST & AL finishes.

Finishes:

- **Electrogalvanized (EG):** Conforms to ASTM B633, Type III SC1
- **Unistrut Defender (DF):** Conforms to ASTM A1059
- **Hot Dip Galvanized (HG):** Conforms to ASTM A123 or A153
- **Perma-Gold (ZD):** Conforms to ASTM B633, Type II SC1
- **Copper Coated (CC):** TBD
- **Everdur (E EG):** TBD
- **Stainless Steel, Type 304 (SS):** ASTM A240, Type 304 *
- **Stainless Steel, Type 316 (ST):** ASTM A240, Type 316 *
- **Aluminum (AL):** TBD

* These materials have different physical properties and performance characteristics. Please [contact us](#) for design support.

Material & Finish Combinations:

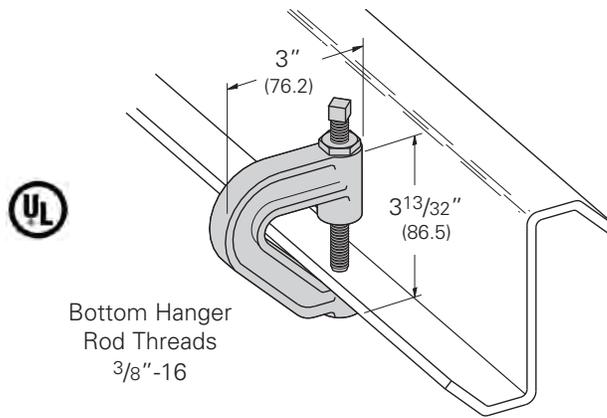
Material / Finish	Part Number Suffix	Pipe Clamp Material / Finish	Fasteners (Screw & Nut) Material / Finish	Example
Electro-galvanized	EG	EG	EG	P1109 EG
Hot-dipped galvanized	HG	HG	SS	P1109 HG
Unistrut Defender	DF	DF	DF	P1109 DF
Stainless Steel Type 304	SS	SS	SS	P1109 SS
Stainless Steel Type 316	ST	ST	SS	P1109 ST
Aluminum	AL	AL	AL	P1109 AL
Copper Coated	CC	CC	CC	P1109 CC
Everdur	E EG	EG	E	P1109E EG

Part No.	O.D. Size	Finish	Product Weight / Piece (lbs)
P2024	1/4" (6.4)	EG	0.08
P2024	1/4" (6.4)	HG	0.085
P2024	1/4" (6.4)	SS	0.08
P2024	1/4" (6.4)	ST	0.08
P2024	1/4" (6.4)	AL	0.027
P2025	3/8" (9.5)	EG	0.08
P2025	3/8" (9.5)	HG	0.085
P2025	3/8" (9.5)	SS	0.08
P2025	3/8" (9.5)	ST	0.08
P2025	3/8" (9.5)	AL	0.028
P2026	1/2" (12.7)	EG	0.09
P2026	1/2" (12.7)	HG	0.095
P2026	1/2" (12.7)	SS	0.09
P2026	1/2" (12.7)	ST	0.09
P2026	1/2" (12.7)	AL	0.03
P2027	5/8" (15.9)	EG	0.1
P2027	5/8" (15.9)	HG	0.106
P2027	5/8" (15.9)	SS	0.1
P2027	5/8" (15.9)	ST	0.1
P2027	5/8" (15.9)	AL	0.033
P2028	3/4" (19.1)	EG	0.11
P2028	3/4" (19.1)	HG	0.117
P2028	3/4" (19.1)	SS	0.11
P2028	3/4" (19.1)	ST	0.11
P2028	3/4" (19.1)	AL	0.037
P2029	7/8" (22.2)	EG	0.12
P2029	7/8" (22.2)	HG	0.127
P2029	7/8" (22.2)	SS	0.12
P2029	7/8" (22.2)	ST	0.12
P2029	7/8" (22.2)	AL	0.04
P2030	1" (25.4)	EG	0.14
P2030	1" (25.4)	HG	0.148
P2030	1" (25.4)	SS	0.14
P2030	1" (25.4)	ST	0.14
P2030	1" (25.4)	AL	0.07
P2031	1-1/8" (28.6)	EG	0.15
P2031	1-1/8" (28.6)	HG	0.16
P2031	1-1/8" (28.6)	SS	0.15
P2031	1-1/8" (28.6)	AL	0.05
P2032	1-1/4" (31.8)	EG	0.16
P2032	1-1/4" (31.8)	HG	0.16
P2032	1-1/4" (31.8)	SS	0.16
P2032	1-1/4" (31.8)	ST	0.16
P2032	1-1/4" (31.8)	AL	0.06
P2033	1-3/8" (34.9)	EG	0.17
P2033	1-3/8" (34.9)	HG	0.18
P2033	1-3/8" (34.9)	SS	0.17

Beam Clamps

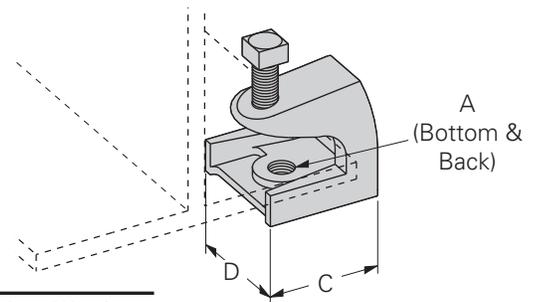
B3037Z Z-Purlin C-Clamp

- Design Load 500 Lbs. (2.22 kN)
- Safety Factor of 5
- Designed for attaching a 3/8"-16 hanger rod to the bottom flange of a Z-purlin
- Setscrew and locknut included
- Material: Malleable iron
- Standard finishes: ZN, PLN



B444 Series Rod Support

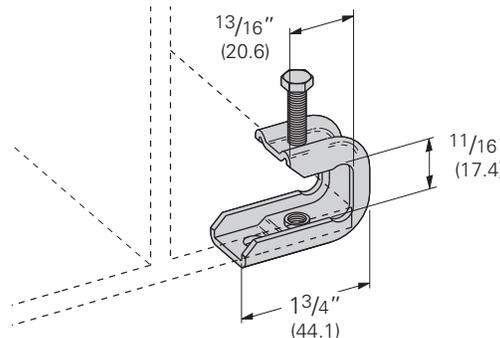
- Safety Factor of 5
- Max. Flange Thickness
3/4" (19.0) for 1/4 & 5/16 sizes
1" (25.4) for 3/8 & 1/2 sizes
- Setscrew included
- Material: Malleable iron
- Standard finish: ZN, available in HDG with CZ Hardware



Part No.	Thread Size A	Set Screw	C		D		Design Load		Wt./C	
			In.	mm	In.	mm	Lbs.	kN	Lbs.	kg
B444-1/4	1/4"-20	1/4"-20	1 3/8"	(34.9)	1 3/16"	(30.1)	150	(.66)	24	(10.9)
B444-5/16	5/16"-18	1/4"-20	1 3/8"	(34.9)	1 3/16"	(30.1)	150	(.66)	23	(10.4)
B444-3/8	3/8"-16	1/2"-13	1 7/8"	(47.6)	2"	(50.8)	350	(7.12)	65	(29.5)
B444-1/2	1/2"-13	5/8"-11	2 3/8"	(60.3)	2 1/2"	(63.5)	1000	(4.45)	132	(59.9)

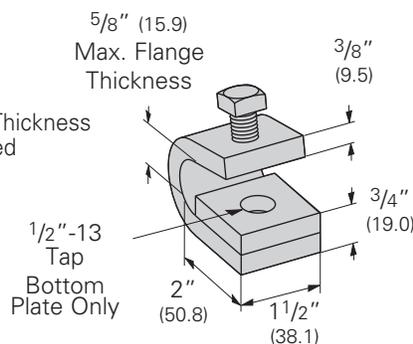
BC442 Light Duty Beam Clamp

- Design Load 75 Lbs. (.33 kN)
- Safety Factor of 5
- 1 1/16" (17.5) Max. Flange Thickness
- Setscrew included
- Holes tapped 1/4"-20 (Bottom & Back)
- Material: 13 Gauge (2.3)
- Standard finish: ZN
- Wt./C 13 Lbs. (3.9 kg)



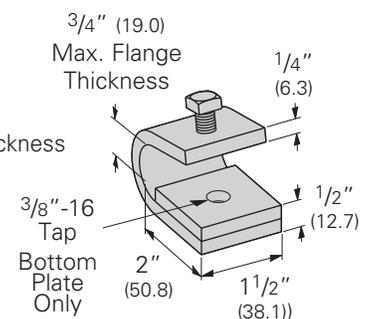
B210 Beam Clamp

- Design Load 800 Lbs. (3.56 kN)
- Safety Factor of 5
- 5/8" (15.9) Max. Flange Thickness
- 1/2"-13 Setscrew included
- Standard finish: ZN
- Wt./C 100 Lbs. (45.3 kg)



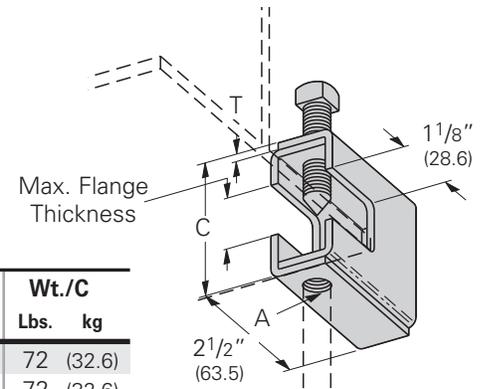
B210A Beam Clamp

- Design Load 300 Lbs. (1.33 kN)
- Safety Factor of 5
- 3/4" (19.0) Max. Flange Thickness
- 3/8"-16 Setscrew included
- Standard finish: ZN
- Wt./C 60 Lbs. (27.2 kg)



B303 thru B309 Beam Clamps

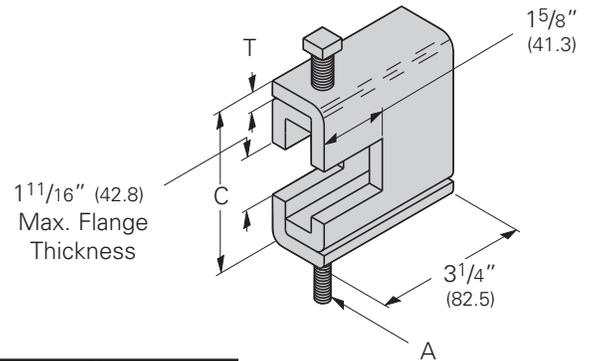
- Safety Factor of 5
- Max. Flange Thickness $1/16''$ (1.6) thru $7/8''$ (22.2)
- Setscrew included
- When Retaining Strap is required, order B312 separately
- Recommended Setscrew Torque: $3/8''$ -16 150 in-lbs. (16.9 N•m)
 $1/2''$ -13 350 in-lbs. (39.5 N•m)
- Standard finishes: ZN, HDG



Part No.	Thread Size A	Set Screw	C		D		Design Load		Wt./C	
			In.	mm	In.	mm	Lbs.	kN	Lbs.	kg
B303	$1/4''$ -20	$3/8''$ -16	$2^{5/16}''$	(58.7)	11 Ga.	(3.0)	400	(1.78)	72	(32.6)
B304	$5/16''$ -18	$3/8''$ -16	$2^{5/16}''$	(58.7)	11 Ga.	(3.0)	600	(2.67)	72	(32.6)
B305	$3/8''$ -16	$3/8''$ -16	$2^{5/16}''$	(58.7)	11 Ga.	(3.0)	600	(2.67)	72	(32.6)
B306	$3/8''$ -16	$1/2''$ -13	$2^{7/16}''$	(61.9)	7 Ga.	(4.5)	1100	(4.89)	97	(44.0)
B307	$1/2''$ -13	$1/2''$ -13	$2^{7/16}''$	(61.9)	7 Ga.	(4.5)	1100	(4.89)	97	(44.0)
B308	$1/2''$ -13	$1/2''$ -13	$2^{9/16}''$	(65.1)	$1/4''$	(6.3)	1500	(6.67)	133	(60.3)
B309	$5/8''$ -11	$1/2''$ -13	$2^{9/16}''$	(65.1)	$1/4''$	(6.3)	1500	(6.67)	133	(60.3)

B321 Series Beam Clamps

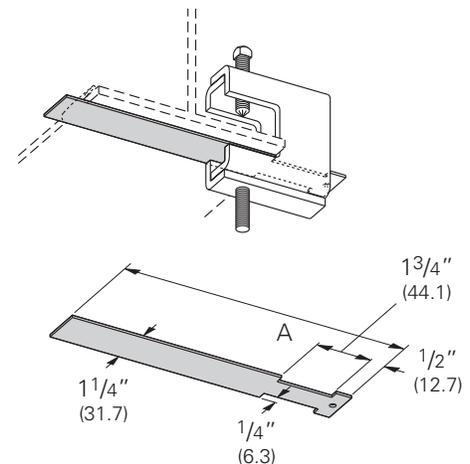
- Safety Factor of 5
- $1^{11/16}''$ (42.8) Max. Flange Thickness
- Setscrew included
- When Retaining Strap is required, order B312 separately
- Recommended Setscrew Torque: $1/2''$ -13 350 in-lbs. (39.5 N•m)
 $5/8''$ -11 700 in-lbs. (79.0 N•m)
- Minimum flange thickness: B321-1 thru B321-3 $1/4''$ (6.3)
B321-4 and B321-5 $3/8''$ (9.5)
- Standard finishes: ZN, HDG



Part No.	Thread Size A	Setscrew Size	C		D		Design Load		Wt./C	
			In.	mm	In.	mm	Lbs.	kN	Lbs.	kg
B321-1	$3/8''$ -16	$1/2''$ -13	$3^{9/16}''$	(92.1)	$1/4''$	(6.3)	1300	(5.78)	187	(84.8)
B321-2	$1/2''$ -13	$1/2''$ -13	$3^{9/16}''$	(92.1)	$1/4''$	(6.3)	1400	(6.23)	186	(84.3)
B321-3	$5/8''$ -11	$1/2''$ -13	$3^{9/16}''$	(92.1)	$1/4''$	(6.3)	1600	(7.12)	185	(83.9)
B321-4	$5/8''$ -11	$5/8''$ -11	$3^{23/32}''$	(94.4)	$5/16''$	(7.9)	1800	(8.00)	239	(108.4)
B321-5	$3/4''$ -10	$5/8''$ -11	$3^{23/32}''$	(94.4)	$5/16''$	(7.9)	2000	(8.89)	238	(107.9)

B312 Series Retaining Strap for use with B303 thru B309 and B321 Series

- $3/4''$ (19.0) Max. Flange Thickness
- For thicker beams, step up one flange width size
- Material: 14 Gauge (1.9)
- Standard finishes: GALV, HDG



Part No.	For Flange Width		A		Wt./C	
	In.	mm	In.	mm	Lbs.	kg
B312-6	6"	(152.4)	9"	(228.6)	22	(10.0)
B312-9	9"	(228.6)	12"	(304.8)	30	(13.6)
B312-12	12"	(304.8)	15"	(381.0)	40	(18.1)
B312-15	15"	(381.0)	18"	(457.2)	49	(22.2)

Reference page 113 for general fitting and standard finish specifications.



Components

1. A hard plastic inner core that measures 1.5" in length with a .50 inch bore, a .75 inch outside diameter and 4 lugs that extend to .84 inches.
2. A plastic sleeve that has a .75 inch inside diameter and a .80 inch outside diameter
3. A 1/4 -20 x 1/2 rubber insulated brass rivet nut
4. A stainless steel 1/4-20 x1" bolt

Port assembly



Installation

Warning: Installation requires the use of concrete drilling equipment. The installer must be familiar with and follow all safety procedures required for the use of such equipment including but not limited to the use of hearing and eye protection.

Port assembly



1. Select the area to drill the hole for the port. The contractor should make every effort to determine the the selected area is free of any utilities or pipes in or under the selected point. In addition the use of a drill interrupter such as the Protek11 is highly recommended .

2. Drill a 20MM (.79") hole through the concrete and clean all dust and debris from both in and around the hole with a commercial vacuum equipped with a HEPA filter.

3. Insert the port assembly into the clean hole and using a dead blow hammer and the driver tool drive the assembly into floor to a point where the top of the bolt is flush with the surface of the floor. The port is now ready to use.

Rubber insulated nut



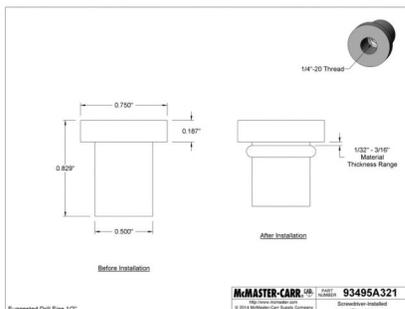
* A 3/4" bit may also be used for step #2. Use 20mm diamond hole bit to clean/bore after 3/4" hole is drilled.

Sidewalk bolt and over-sized washer included if flush floor mount is needed.

Protek 11 Drill Interrupter



Rubber insulated nut





Environmental System and Site Monitoring Sensor Platform

1,000 Foot Range with 10+ Year Battery Life

Superior Wireless Range

1,000 + ft. line of sight up to 10-12 walls*

Long Battery Life

10+ Years when Powered by 2 AA batteries*

Onboard Data Memory

Stores up to 512 readings per sensor.***

Future Proof

Over-the-air updates allow products to be updated remotely.

Low Cost Monthly Fees

Plans begin at \$13.25 per month for up to 6 sensors



OVER 50 DIFFERENT SENSORS

Temp, CO, CO2, H2S, PM2.5, Pressure, 0-10V, 4-20ma



4 Different Wireless Gateways

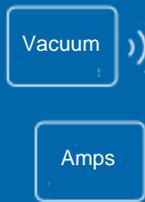
Accept 100 Wireless Sensor Inputs.



Works with Obar Instrument Gauges

Multiple gauges to choose from or use any 0-10 volt sensor to collect data.

Wireless Sensors



Wireless Gateway



Online Monitoring and Alerts



Scan Code to
Download Obar APP



* Wireless range may vary according to environment
** Battery life determined by sensor reporting & other variables.
*** 10 minute heartbeats= 3.5 days/ 2 hour heartbeats = 42 days

GBR 25 Mini Digital Differential Pressure Gauge With Alarm

System alarms and monitoring made simple and affordable.

Finally a product that has what you need and can be easily installed.

The GBR 25 is a compact stand alone system gauge with an audible and visual alarm that works for VOC and Radon systems operating at system pressures greater than 2" wc. Included is a second relay that can be used to trigger additional alarms.

Includes Power supply

Optional 4-20 MA or 0-10 outputs can be used to monitor system pressure.

Contact OBAR for a quote to build custom alarm panels for your needs.

Applications and features

- Scale 0-40 inches WC eliminates need for multiple gauges.
- Visual and audible alarm included and factory set at 1" WC
The alarm set point can be changed in the field.
- Second adjustable relay for triggering additional alarms.
- Optional 4-20 MA or 0-10 output for data.
- Accuracy is up to $\pm 1\%$ FS, with large LCD display.
- Function keys: zero reset, units select, display update time, automatic sleep time, alarm, etc.

Specifications

Medium: Non-combustible, non-corrosive air, insensitive to moisture, dust, condensation and oil

Working Temp.: 20~70°C

Medium Temp.: 0~60°C

Temp. Compensation: 0~50°C

Working Pressure: overload 10xFS, burst 15xFS

Display: 5 bits LCD, with engineering unit & backlight

Output: 0-10V / 4-20mA (3 wires)

Output load: $\leq 500\Omega$ (current), $\geq 2K\Omega$ (voltage)

Relay Output: 2xSPST, 3A/30VDC, 3A/250VAC or 1xBuzzer

Accuracy: up to $\pm 1.0\%$ FS ($\pm 2.0\%$ FS@25Pa range)

Long term stability: $\pm 0.5\%$ FS /Year

Thermal effect: $< 0.05\%$ FS/°C (zero), $< 0.08\%$ FS/°C(FS)

Power type 16~28VDC/AC

24V Power Supply included

Process Connection: 5mm ID tubing, two pairs (left/back)

Keys: 3 touch buttons

Protection: IP54

Approval: CE

Display update time: selectable for 0.5/1/5/10s (default 1s)



Related Products

EDG Wireless Gateway and Sensors



Installation Guide for GBR 25T and EDG 0-10 Sensor

The GBR 25T has all the features of the GBR 25 and has both 0-10V and 4-20ma output. Pair this gauge with the OBAR EDG 0-10v Wireless Sensor and EDG Gateway so you can view and save your system data and manage your text and email alerts.



Warning

All wiring should be done with the Power OFF to the system gauge. Make sure the EDG 0-10V sensor is wired to the correct polarity on the gauge terminals. Failure to wire correctly will result in damage to the sensor.

1. Mount the GBR25 gauge.
2. Mount the EDG 0-10V Sensor. If you are installing multiple EDG Sensors they must be a minimum of 4' apart and 10' from the EDG Gateway
3. Make sure the power is off to the GBR 25 gauge.
4. Connect the 2 wires from the 0-10V sensor to the terminal block on the GBR25 Gauge making sure the polarity is correct.
5. Power up the GBR25 Gauge
6. Follow the directions for the EDG Sensor installation for activation of the sensor network.

Related Products





GC 4 x 8S

Coconut shell granular activated carbon

GC 4X8S granular activated carbon is ideal for most air purification purposes. Made from selected grades of coconut shell, its superior level of hardness makes it cleaner than most other carbons and gives it longer life expectancy. This, combined with its high activity level, makes it well suited for use in any kind of carbon filter or system.

Specifications

Mesh Size-4X8, %:	90 (min)
Less than No. 4, %:	5 (max)
Greater than No.8, %:	5 (max)
CCl4 Activity, %:	60 (min)
Iodine No., mg/g:	1100 (min)
Hardness No., %:	98 (min)
Ash Content, %:	5 (max)
Moisture, % (as packaged):	5 (avg)
Typical Density, lbs./cu.ft:	28-32
g/cc:	0.47-0.50

*Standard packaging is in 55lb and 1,100lb vinyl bags. Other packaging is available upon request with an additional cost.

Caution!

Wet activated carbon removes oxygen from air causing a severe hazard to workers inside carbon vessels. Confined space/low oxygen procedures should be put in place before any entry is made. Such procedures should comply with all applicable Local, State and Federal guidelines.

33 Paterson Street Paterson, NJ 07501 Tel: 973-523-2223 Fax: 973-523-1494