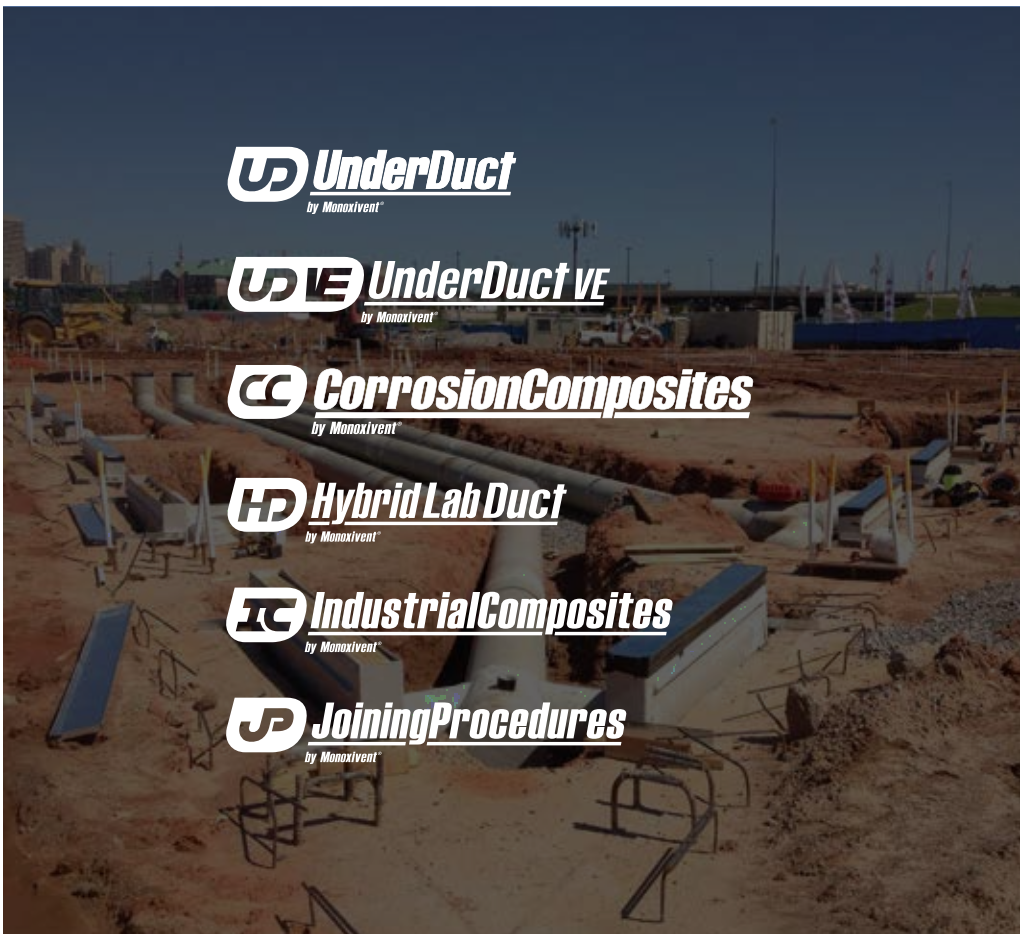






FRP Solutions by Monoxivent®



- UnderDuct by Monoxivent®
- UnderDuct VE by Monoxivent®
- CorrosionComposites by Monoxivent®
- Hybrid Lab Duct by Monoxivent®
- IndustrialComposites by Monoxivent®
- JoiningProcedures by Monoxivent®



WELCOME TO MONOXIVENT FRP

Monoxivent Source Capture and Fiberglass Reinforced Plastic Products are divisions of Crawford Company. Monoxivent goes to market throughout the United States and Canada. Crawford specializes in heating, ventilation, air conditioning, plumbing, laser cutting, specialty welded fabrication, and brewing equipment. The company operates out of a 70,000-square foot facility in Rock Island, IL and competes in commercial, industrial, and residential markets. The company is guided, as it has been for over 60 years, by our original values: a commitment to product quality, customer service, innovation, business integrity, and a high regard for individual contributions.

UNDERDUCT AND CORROSION COMPOSITES

The UnderDuct and Corrosion Composites brands are leaders within the Fiberglass Reinforced Plastic (FRP) market. The brands are promoted within the overall Monoxivent framework. Our dedicated efforts, from concept to completion, have positioned Monoxivent FRP for continual success within industrial, commercial, and residential segments. Located in Rock Island, IL, we design, engineer, and manufacture HVAC UnderDuct and specialty Corrosion Composites projects. Monoxivent's manufacturing source has over 40 years of experience and is a leader in the FRP Duct and corrosion markets. Monoxivent has a nationwide network of sales representatives and a top-tier inside support staff.

FRP Solutions by Monoxivent®

UnderDuct by Monoxivent®

- VERSATILE
- CODE COMPLIANT
- GREEN BUILDING
- LOW SMOKE, FLAME
- FACTORY ASSEMBLY
- LOW VOC JOINT
- CUSTOM CONFIGURATION

OVERVIEW

UnderDuct is leading the way for code compliant LEED driven underground HVAC systems.

UnderDuct is a corrosion resistant, high strength, light weight, Class 1 duct material, per NFPA 90. UnderDuct is ideal for displacement ventilation, allowing for the most economical long term energy savings. UnderDuct is shop fabricated with a minimum number of field joints.

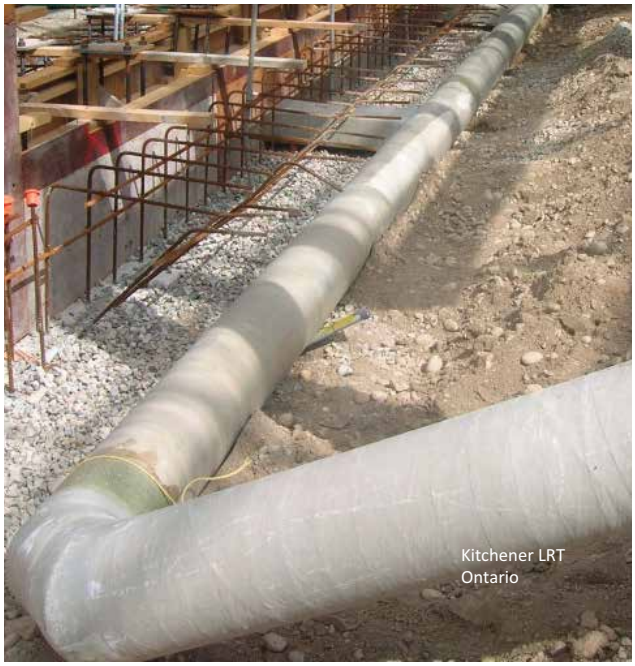
Monoxivent has a nationwide network of sales representatives and a top-tier inside support staff that provides engineering, design, sales, service, and marketing. UnderDuct is offered both in single wall and pre-insulated double wall construction to meet any ventilation needs.

MARKETS

Supply, return, and exhaust systems include, but are not limited to: auditoriums, auto exhaust, banks, botanical centers, churches, transportation centers, hospitals, libraries, parking garages, residences, restaurants, schools, super markets, swimming pools and zoos.



Davenport Eastern Avenue Library



Kitchener LRT Ontario

SINGLE WALL DUCT

Our Class 1 rated single wall duct, meets 25/50 flame/smoke requirements of ASTM E 84. Monoxivent UnderDuct 824 Low Smoke has been approved for underground applications. It is an excellent choice for corrosive environments where flame and smoke development are a concern, such as laboratories and swimming pools.


Single Wall

Monoxivent's single wall register boot (below) is shown during installation. The corrosion resistant boots are high strength and meet the same standards as typical single wall UnderDuct. Register boots are available in double wall construction as well.

DOUBLE WALL DUCT

Double wall Monoxivent UnderDuct, also a Class 1 rated duct, will eliminate any thermal losses and save time and money compared to insulating on site. When supplied with the standard 1" insulation, the duct has a k factor of 0.16 and an R Value of 6. Also available in R-10 and R-14 by request.


Double Wall

Double Wall Insulated UnderDuct fully complies with the latest version of the International Energy Conservation Code (IECC) which requires specific R-values determined by ASTM testing methods.

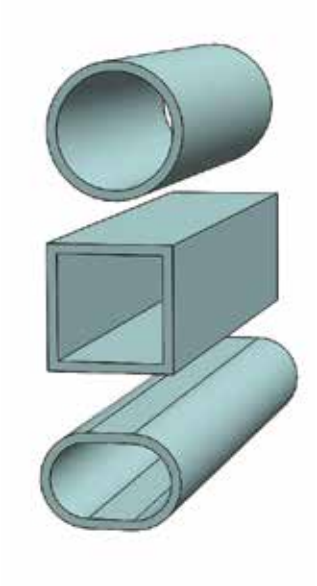

Single Wall


Double Wall

FRP CONFIGURATION

SHAPE

Round, rectangular and oval are typical filament wound construction shapes. Upon request, shapes such as triangular and others are available. Qualified Monoxivent staff is available for designing projects requiring non-standard construction.



DIAMETER

Duct diameters are available from 2-inch through 14-feet, and rectangular sizes as required for your projects. Monoxivent's 824-API pre-insulated double wall duct is also available in the above ranges.

ABOVE GROUND APPLICATIONS FOR UNDERDUCT

UnderDuct was originally designed for direct burial without concrete encasement, however it has also been used in above ground applications due to its' corrosion resistance and low smoke/low flame rating.



Above Ground UnderDuct at Kansas City Penguin exhibit

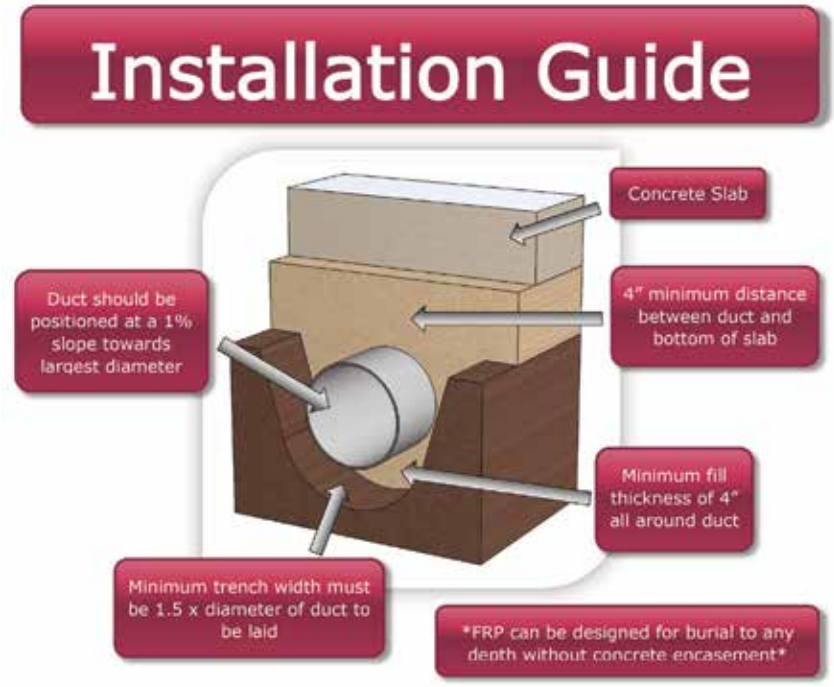
INSTALLATION, BURIAL GUIDELINES

UnderDuct FRP should be laid in a graded trench with good drainage on a 4" bed of pea gravel. Minimum distance from under the slab to top of duct is 4" of compacted fill. The recommended maximum is 6' of compacted fill, however the duct can be designed for deeper burial.

Encasement in concrete is not necessary with round UnderDuct. With fiberglass boots in place and sealed, cover with sand or pea gravel and pour floor slab, no delay or tie downs required on round duct.

Duct is manufactured with a resin rich veil on the ID and OD to prevent water infiltration. Where ground water infiltration is possible the field joints should be made using the wet lay-up method as described in the installation instructions.

(Note, leak test the system before backfilling)





UnderDuct installed at Oklahoma City Boathouse

UNDERDUCT STANDARDS FOR QUALITY ASSURANCE

Underground HVAC ductwork properties must assure that the product has structural integrity throughout all of the component sections and connections and resist expansion/contraction. It must have a high degree of thermal resistance to thermal transmittances through its wall layers (U Value). To insure life safety, underground ductwork must exhibit a flame spread of less than 25 and smoke spread of less than 50, commonly referred to as 25/50.

What are the standards for assurance? Listing Criteria #LC1014, set by the ICC-ES (International Code Council Evaluation Service) for underground ductwork and the independent testing laboratories that administer the tests and certify the result. This is the basis for approved products to be included in the International Building Code (IBC), International Mechanical Code (IMC) and the International Residential Code (IRC). Products tested to the ICC standards include the provision for yearly inspection of the manufacturing facilities as a part of the quality assurance for compliance. UnderDuct is an approved product and is listed in ICC-ES listing PMG-1171.

ICC Evaluation Service PMG Listing Criteria For Underground Plastic Air Ducts LC1014 is the standard to which UnderDuct has been tested and certified to meet and exceed the following:

ASTM D2412:

Standard Test Method for Determination of External Loading Characteristics of Plastic Pipe by Parallel-Plate Loading.

UnderDuct straight sections, fittings and connections are filament wound set in resin structures to create a monolithic duct system which allows UnderDuct to exceed the requirement of the standard.

ASTM E84:

Standard Test Method for Surface Burning Characteristics of Building Materials.

Only UnderDuct has passed this test and is classified as Class 1 by virtue of the actual resin used in its construction. Other manufacturers use metallic liners on the interior to pass this test or don't meet this standard at all.

UL 723:

Test for Surface Burning Characteristics of Building Materials- UnderDuct far exceeds any competitor's product for the same reasons as it does for the ASTM E84 test.

ASTM C518:

Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus.

UnderDuct has been properly tested using the ASTM C518 test method, which determines the actual R value of a material; UnderDuct is documented to have an R-6 insulation value. ***The International Energy Conservation Code (IECC) REQUIRES specific R-values for buried duct determined by ASTM test methods. Double Wall Insulated Duct is in FULL COMPLIANCE with the IECC.***

UL 181:

Mold Growth and Humidity Test

Leakage Testing:

UnderDuct is approved for burial (6') below the Base Flood Elevation.

As a result of the above tested approvals, UnderDuct meets, exceeds and is approved to the standards of the California Energy Commission Title 24. The insulating foam used in the double wall construction of UnderDuct is licensed by The Bureau of Electronic and Appliance Repair, Home Furnishings and Thermal Insulation.

UNDERDUCT RECEIVES CODE APPROVAL FROM ICC-ES

"UnderDuct is an ICC Approved product, properly tested to the applicable standards of LC1014."

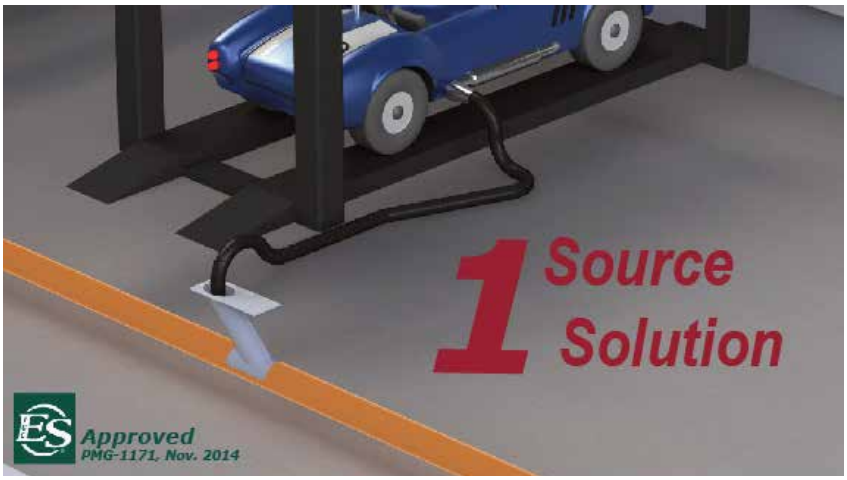
Monoxivent has received confirmation from ICC Evaluation Service, LLC (ICC-ES), that its UnderDuct Fiberglass Reinforced Plastic duct is approved with the provisions of the:
International Mechanical Code® (IMC)
International Residential Code® (IRC)
Uniform Mechanical Code® (UMC)*
California Mechanical Code® (CMC)
National Building Code of Canada (NBC)

*Uniform Mechanical Code is a copyrighted publication of the International Association of Plumbing and Mechanical Officials.

This confirmation, as evidenced in ICC-ES listing PMG-1171, provides guidance to code officials faced with approving the use of UnderDuct under these codes.

UNDERDUCT-VE: CORROSION RESISTANT UNDERFLOOR DUCT FOR VEHICLE EXHAUST REMOVAL

UnderDuct by Monoxivent, is pleased to announce: UnderDuct-VE. The corrosion resistant underfloor exhausting duct is rated to 500 degrees F. The duct does not need concrete encasement. The duct's smooth bore allows for more efficient airflow and less pressure drop, making it the perfect match with Monoxivent under ground exhaust equipment for a complete Source Capture package.



Under-Duct VE is the ONLY non-metallic vehicle exhaust duct certified to meet building codes by the ICC (International Code Council) as outlined in IMC 510.8

IMC 510.8, Duct Construc on:
"Nonmetallic ducts utilized in systems exhausting non flammable corrosive fumes or vapors shall be listed and labeled. ***Nonmetallic duct shall have a flame spread rating of 25 or less and a smoke-developed rating of 50 or less, as tested in accordance with ASTM E 84****. Ducts shall be approved for installation in such an exhaust system."*



UnderDuct VE Benefits:

• 1 Source System for Vehicle Exhaust Removal and Underground FRP Duct

• Corrosion Resistant to Exhaust Gas and Condensate

• Corrosion Resistant to Ground Conditions

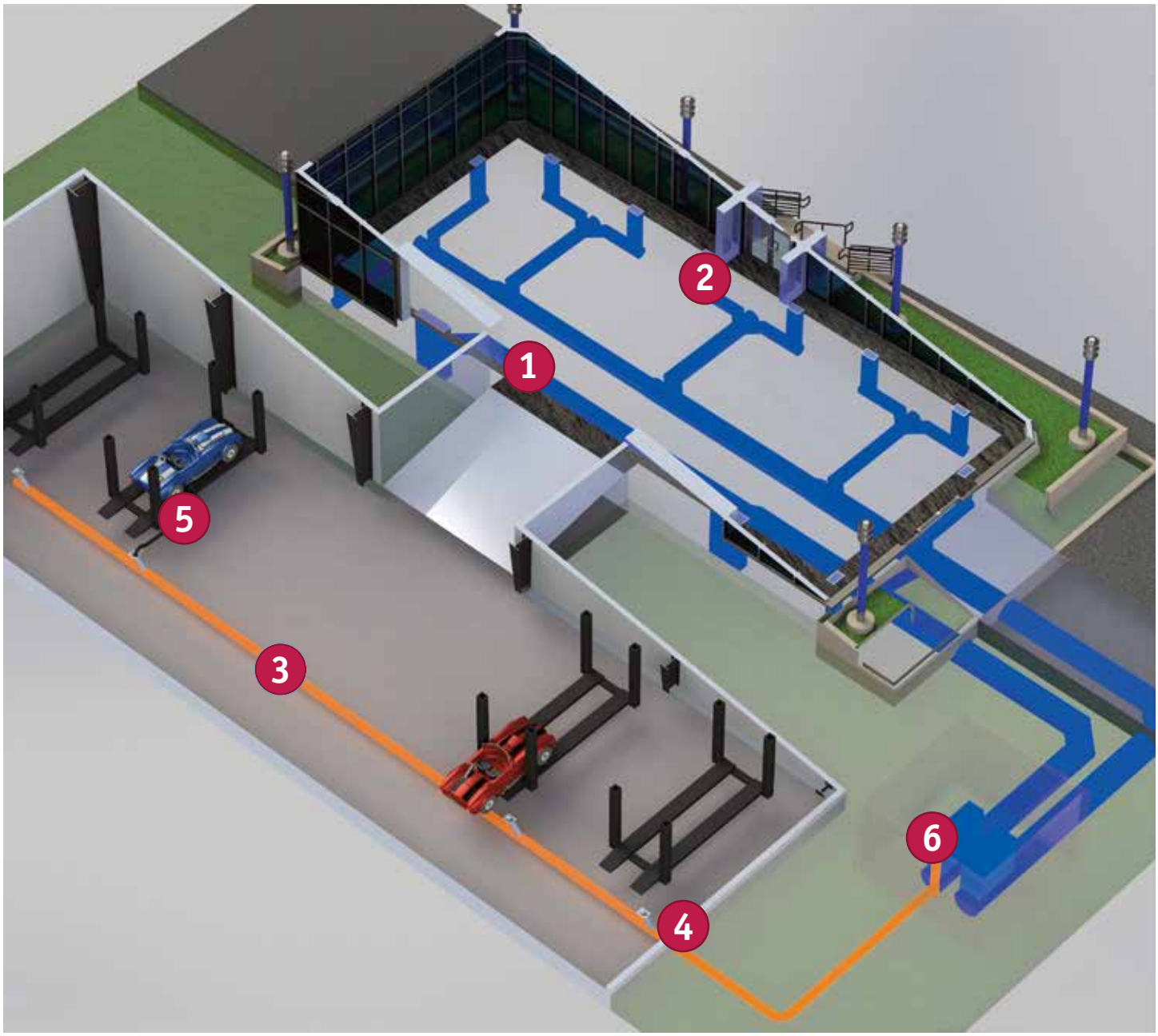
• Tested and certified to 500° F

• Approved for Direct Burial, no concrete encasement required

• One stop shopping for a complete ICC approved Un derground Vehicle Exhaust System

• VE Duct will not leak when installed properly. In fact, the duct is designed to withstand both high water table conditions and wash water run off.





MONOXIVENT, UNDERDUCT INSTALLED - GENERAL LAYOUT

1.Monoxivent's Double Wall Insulated UnderDuct
2.Monoxivent's Single Wall UnderDuct Register Boots
3.UnderDuct-VE (Vehicle Exhaust) Ductwork
4.Monoxivent 23800 Floor Exhaust Outlets
5.Monoxivent 3000 Series No Crush Hose
6.Monoxivent Custom Mechanical Equipment Connections

GREEN BUILDING WITH UNDERDUCT: ENVIRONMENTALLY SOUND AND SUSTAINABLE

UnderDuct by Monoxivent®

Due to the 'green' aspects of our fiberglass reinforced plastic underslab duct, FRP duct is a key component of sustainable building. The quality and strength of our FRP duct means a longer life, which saves resources, and maximized airflow uses energy more efficiently.

U.S. GREEN BUILDING COUNCIL MEMBER

- Smooth and improved air flow
- Energy savings with insulated FRP duct
- Maximizes air flow and efficiency
- Resistance to mold, corrosion, leakage, moisture damage
- M-824 low flame (25) and smoke (50) – Class 1 Rating
- Long-life duct
- Energy savings through Displacement Ventilation Design
- Contributes to LEED Certification
- Allows for "open concept" design in buildings
- Laminated joints for complete seal



UnderDuct at LEED Certified Oklahoma City Boathouse

Sydney, Australia

SYDNEY PORTS CORPORATION



CASE STUDY

Challenge:
On 20 December 2009, the Australian Premier announced that the NSW Government decided to permanently relocate the Darling Harbour No. 8 Cruise Passenger Terminal to White Bay 5, in accordance with the recommendation from the Passenger Cruise Terminal Steering Committee. The new terminal would have to service thousands of passengers in a comfortable indoor environment.

Solution:
The terminal construction was started in March 2012 and Monoxivent's Double Wall Insulated Buried Duct was chosen to serve as the facilities HVAC system. This required an extremely demanding solution as the buried ductwork is regularly subjected to fluctuating tide water and Monoxivent's UnderDuct provided that solution seamlessly.

Davenport, IA

EASTERN AVE. LIBRARY, LEED PROJECT

CASE STUDY

Challenge:
As part of an expansion to their district, the Davenport Library sought to build a new, eco-friendly branch to fulfill the needs of its growing community. It was decided that the new building should seek LEED Certification.

Solution:
UnderDuct, by Monoxivent, has played an integral role in the construction of one of Iowa's LEED green buildings: Davenport's Eastern Avenue Library. Double Wall Insulated UnderDuct is one of the sustainable components that were incorporated into the environmentally friendly design which achieved a Silver LEED Certification along with numerous other awards.





Eldorado Hills, CA

VON HOUSEN AUTOHAS, MERCEDES-BENZ



CASE STUDY

Challenge:
In an effort to achieve the Autohas/Mercedes-Benz-USA image adopted by over 80% of the country's dealerships, the luxury car store in Eldorado Hills was transformed to look like other Mercedes-Benz dealerships.

Solution:
The building expansion included a 2,000-sq. ft. glass and metal showroom that emulates the Autohas image. Monoxivent's Double Wall Insulated buried duct work was chosen for its HVAC system that enabled the creation of a large open space. This is certainly a case of a high quality installation for a customer quite familiar with high quality products!



Chippewa Falls, WI

UNDERDUCT-VE AT MARKQUART MOTORS

Challenge:
Markquart Motors was looking to expand its' Toyota Dealership in Chippewa Falls. SDS Architects and Karges-Faulconbridge teamed up to de-sign the new state-of-the-art facility with 20 work stations.

CASE STUDY



Solution:
Midwest Mechanical Solutions, of Minneapolis, MN, partnered with Monoxivent to supply over 200' of underground CODE APPROVED VE-DUCT. The system includes 20 stainless steel covered floor outlets, stainless steel saddles with 3" no crush Series 3000 hoses and neoprene tailpipe adapters . Two 5 HP Monoxivent Backward Inclined BI-150 belt drive blowers were also supplied for connection to the specialty FRP duct with debris cleanout ports. This duct system, which can handle the high heat and corrosive nature of vehicle exhaust, also provide an excellent alternative and lasting solution to the problem of corroding metal ducts installed underground.







Kansas City, MO

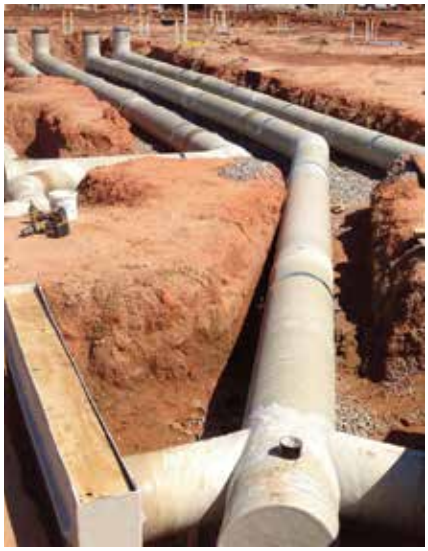
ZOO PENGUIN PLAZA

Challenge:
To efficiently and responsibly handle the exchange and air flow to the KC Zoo Penguin Plaza.

CASE STUDY

Solution:
The Kansas City Zoo at Swope Park envisioned the creation of a state-of-the-art penguin exhibit in keeping with the Zoo's commitment to public education, and enhancing the care and survival of four different species of penguins. The Helzberg Penguin Plaza was the result. The $15-million facility is one of three buildings at the zoo that is LEED certified (Gold). Monoxivent partnered with Triangle Sales for the project ventilation. Due to the chemical corrosiveness of dealing with two aquariums and the sea water in the air, Monoxivent provided UnderDuct product in above ground applications. These Class 1 ducts and fittings, in sizes ranging from 10"-30" diameter, were pre-fabricated for ease of system assembly. Once on site, they were quickly put in place using minimal joining, which allowed for on schedule project completion. The commitment of the Zoo and Monoxivent to the development of Green buildings and products allow the public and penguins to breathe easier.





Oklahoma City, OK

CHK BOATHOUSE



Challenge:
To provide a green friendly solution to duct-work at the new CHK Boathouse. The pre-mier facility will serve as a boathouse, live music venue, art gallery and more.

Solution:

CASE STUDY

UnderDuct was used to provide dis-placement ventila-tion for the latest addition to the Oklahoma City riverfront, the CHK Boathouse. Over 230' of 16" diameter UnderDuct was used on the project, including many lengths of smaller diameter duct, fittings, and boots.

R.B. Akins, Monoxivent's local representa-tive, worked with the design firm and con-tractor to ensure all project specifications were met. UnderDuct was the ideal choice of product at the waterfront rowing facility because of the corrosion resistance of the duct in the waterfront environment. The CHK is part of an overall Boathouse District in the city. Oklahoma City is positioning itself as a national destination for rowing competitions. The CHK facility is the second of three planned in the area.

ONLINE RESOURCES FOR MONOXIVENT FRP: www.fiberglass-duct.com, on Facebook, and YouTube



CorrosionComposites by Monoxivent®

- *LIGHT WEIGHT*
- *HIGH STRENGTH*
- *NON-CONDUCTIVE*
- *CORROSION RESISTANT*

- *DUCTS, HOODS, STACKS, PIPES, PLATFORMS, TANKS, SCRUBBERS, CUSTOM ITEMS AND MORE!*

OVERVIEW

Corrosion Composites is a source for corrosion resistant Fiberglass Fabrication Services. Fiberglass laminated composites are light weight, high strength, non conductive, and corrosion resistant. Monoxivent assists with design, engineering, drawing, manufacturing, inspection and installation. Monoxivent brings together years of fiberglass experience and manufacturing expertise. For many industrial, water and wastewater applications where corrosion is a problem, fiberglass is the material of choice.

MARKETS

Corrosion Composites is found with industry, manufacturing, water and wastewater markets. Products include: duct, scrubbers, dampers, tank covers, weirs, platforms, stacks, flumes, manholes, stack liners, trenches, pressure vessels, tanks, hoods, troughs, baffles, ladders and more!



Corrosion duct



Corrosion duct

DURABILITY

Monoxivent's Corrosion Composites provide excellent resistance to corrosion and offer a very long service life. Laminates are designed for wind, seismic, snow, pressure, vacuum and temperature.

STANDARDS

Corrosion Composites adhere to ASTM, SMACNA and other industry standards.

EXPERIENCED TEAM

Monoxivent's design team offers engineering and layout support for custom solutions. This coupled with a manufacturing source featuring 40 years of experience, a 98,000-sq. foot facility and state-of-the-art equipment makes Corrosion Composites an excellent source for FRP products.



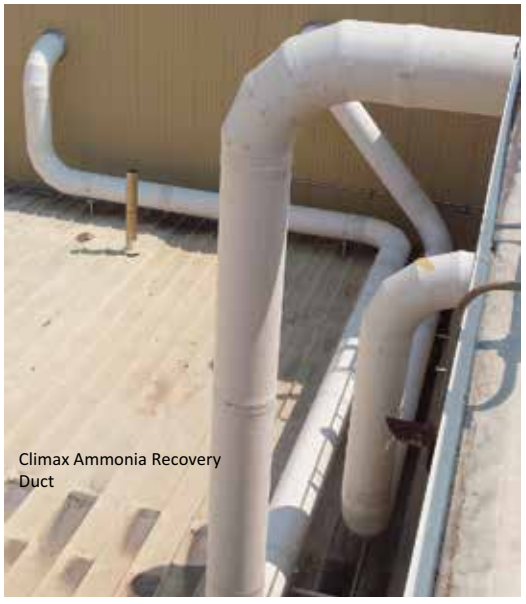
Corrosion Duct System



Odor Control Hoods and Duct System for Owatonna Wastewater



Corrosion Duct System



Climax Ammonia Recovery Duct

HYBRID CF (CORROSIVE FUME) LAB DUCT

Lab Duct can handle a wide variety of chemical fumes, including strong acids and caustics. Condensate formed in the duct system can concentrate these chemicals due to evaporation, making them even more corrosive. Because a Lab is considered occupied space, the structural and exterior surface of the duct requires a low smoke and flame rating per UL-181, as well as low fire-gas toxicity. This product blends the interior corrosion barrier with an exterior Class 1 duct material.

APPLICATIONS

- Hospitals
- Aquariums
- Dog kennels
- Exposed vehicle exhaust duct
- Swimming pools
- Laboratories
- Industrial applications



Minneapolis Water Plant, Ammonia Addition Duct, Lab Duct



Lab Duct

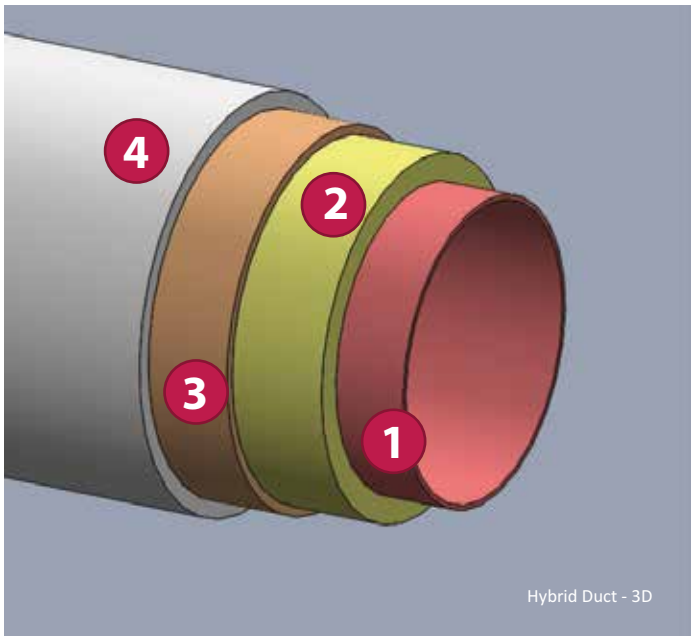


Lab Duct



Lab Duct, Northwestern Univ.

Hybrid Lab Duct by Monoxivent



Hybrid Duct - 3D

Hybrid Duct

1.Vinylester Interior - Fire Retardant Corrosion Liner
2.Modified Acrylic Structural Layer - Class 1 Rated for Low Smoke & Low Flame
3.Modified Acrylic Exterior - Class 1 Rated for Low Smoke & Low Flame
4.Exterior Coating - Factory Applied Corrosion Resistant Gel coat

CORROSION COMPOSITES - INDUSTRIAL MARKETS & CUSTOM DESIGN

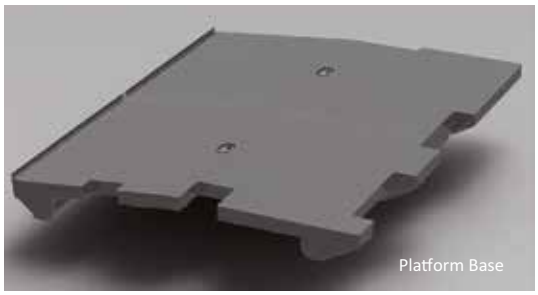
Monoxivent Industrial Composites delivers top tier service from design to completion. Monoxivent provides design assistance, manufacturing and the delivery of custom/one-of-a-kind products that meet customer needs the world over. Being problem solvers is what Monoxivent is all about.

Whether it is a duct application, wet or dry scrubber system, storage tanks or other custom application, we can dedicate our experience to the project and resolve issues that translate into production dollars. Often, Monoxivent FRP is called on to offer solutions for applications that require special shapes and specific parameters such as corrosion resistance or high strength/light weight. Teaming with some of the most advanced plastics fabricators and engineers, Monoxivent has provided long term solutions through innovation and creativity in helping with segmented storage tank covers, stacks, towers, troughs, fluid bed plenums and mist eliminator housings, just to name a few. Corrosion is our specialty and we are intent on being a resource for water treatment, waste water, chemical plants and industrial manufacturing facilities.


FRP Dome

APPLICATIONS

- Wastewater
- Water Treatment
- Acid Plants
- Chemical Plants
- Corrosive Environments
- Manufacturing Facilities


Platform Base


Salco Stack


GEA Process Systems
Fluid Bed Dryer Plenum


Calumet/Chicago
Grit Flumes Installed

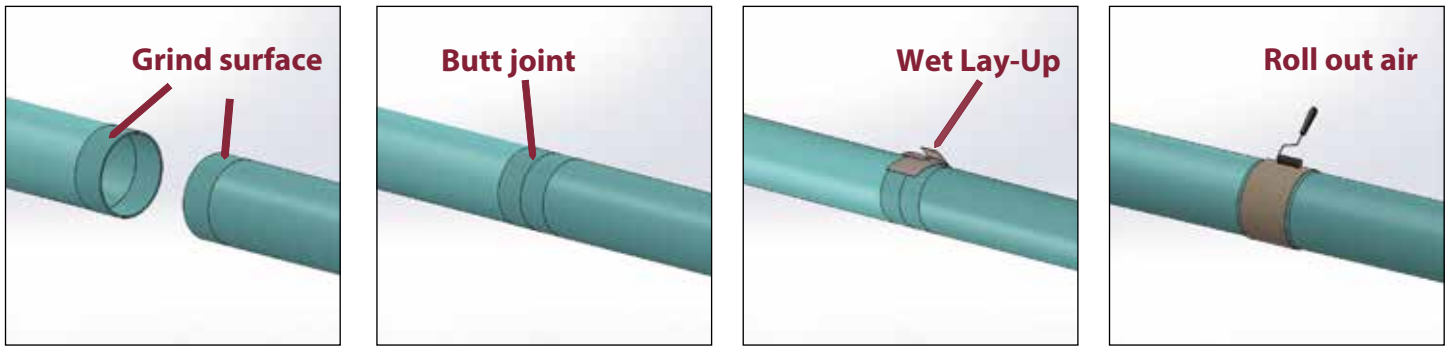
FRP DUCT CONNECTIONS FOR UNDERDUCT & CORROSION COMPOSITES

Monoxivent FRP offers a complete line of fiberglass fittings to complete your FRP Duct system. These quality fittings made from fiberglass composite materials are designed and manufactured to the highest standards. Field joints within the corrosion resistant product line are made using the wet lay-up method using a glass, resin wrap.

Monoxivent FRP products are factory manifolded to the greatest extent possible to save on installation cost and there are several types of field connections available depending on the application.



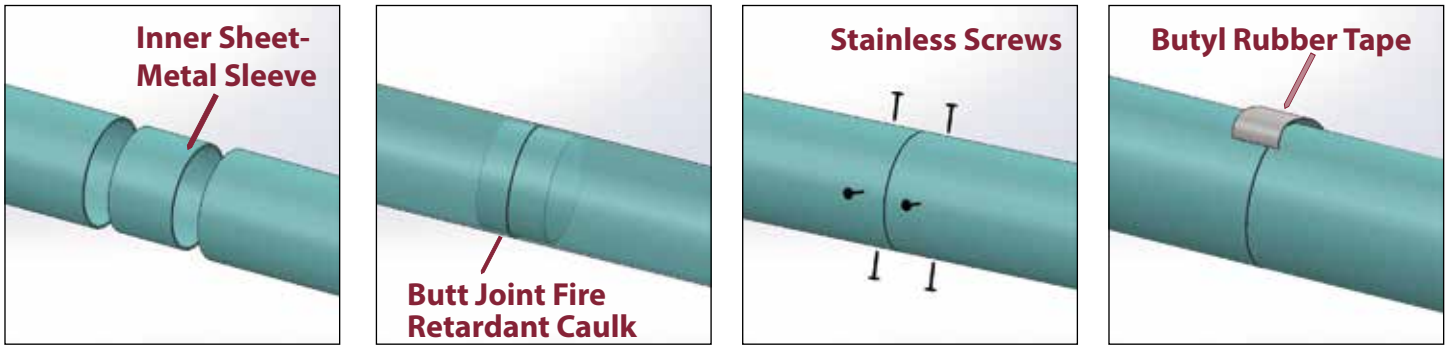
Wet Lay-Up / ASTM Standard



WET LAY-UP

The preferred method for joining Monoxivent FRP duct in the field is the ASTM D3982 Butt & Wrap Method. This method can be used on all FRP applications.

Dry Connection / with internal sleeve



SMACNA DRY FIT - UNDERGROUND DUCT CONNECTION OPTION

For underground installations where high water table is not an issue, a dry joining method is available as recommended by SMACNA. This joint consists of a screwed internal metal sleeve, UL Listed non-hardening waterproof duct sealant and an external polyethylene-backed butyl rubber tape.

JP JoiningProcedures by Monoxivent®









GripSeal by Monoxivent®

Joining Made Easy. The Grip Seal clamping method takes the best material choice for underground applications (UnderDuct) and truly makes for the quickest and easiest installation of any underground duct system on the market today!

Grip Seal is fabricated of the same Class 1 (low flame/low smoke rated) material as duct. Grip Seal is available up to 36" diameter, double what other manufacturer's clamping systems offer (only up to 18"). Tap connections are available up to 24" diameter.

GRIP SEAL STRENGTHS

- NO ODOR, NO VOC'S
- NO RUNNING OUT OF RESIN BECAUSE OF WASTE
- NO HAZARDOUS MATERIAL FEES IN SHIPPNG COST
- CAN BE INSTALLED IN COLD WEATHER
- SAME CLASS 1 MATERIAL AS DUCT (LOW SMOKE/LOW FLAME)
- SIX TIMES THE TENSION STRENGTH
- PRESSURE TESTED UP TO 2 PSI
- GRIP SEAL CONNECTORS UP TO 36" DIAMETER
- TAP CONNECTIONS UP TO 24" DIAMETER
- TAPS CAN BE EITHER FACTORY INSTALLED OR FIELD LOCATED

Owatonna, MN

WASTE WATER TREATMENT DUCT, HOODS

Challenge:
The City of Owatonna expanded their waste water treatment facility which entailed expanding the odor control system as well.

CASE STUDY



Solution:
Monoxivent fabricated all of the corrosion resistant ductwork as well as the control dampers and two custom built fiberglass hoods for odor capture. This duct will be an integral part of the waste water treatment plant for years to come.

Chicago, IL

CALUMET WATER RECLAMATION PLANT

Challenge:
The Metropolitan Water Reclamation District of Greater Chicago recently added a grit removal facility to their Calumet Waste Water Treatment plant. The process required (8) each 120' long corrosion resistant sloped flumes with an abrasion resistant surface. Flume elevations and equipment clearance without the use of cross bracing was also critical.

CASE STUDY



Solution:
Monoxivent designed the trough system to fit the process requirements for Metcalf & EDDY / AECOM's grit removal design. In addition to the abrasion and corrosion resistance the flumes had to resist deflection in the horizontal and vertical when full at 36'' deep. Overflows, stilling wells and level devices had to be designed in close tolerance. The flumes sections were manufactured in 20' long flanged sections with a 1% bottom slope and a level top over the 120' length. The flumes were supported every 10' with stainless steel supports. Monoxivent's grit flumes are a critical part of the grit removal system and will last for many years.



Bettendorf, IA

AMERICOLD CORROSION TANK

Challenge:
A frozen food warehouse in Eastern Iowa needed to replace a failing steel tank.

CASE STUDY

Solution:
AMERICOLD sought out Monoxivent and its' parent company (Crawford) to replace the steel tank. A new corrosion resistant fiberglass tank was installed.
The tank is part of the ammonia refrigeration process that serves the warehouse. The tank reclaims treated water for the process. Crawford removed the existing tank, installed the FRP tank, provided process piping and associated plumbing work.



Rock Island Arsenal, IL

CANOPIES

CASE STUDY

Challenge:
The Corps of Engineers, at the historic Clock Tower Building, sought out a aesthetically pleasing and sustainable covering for three entry points.



Solution:
Monoxivent, along with parent company Crawford, designed, fabricated, and installed three fiberglass canopies. The canopies feature a color scheme and oak leaf accent to match the original historic design at the Clock Tower. The building dates back to 1867 and is constructed of native sandstone.

Detroit, MI

DETROIT WWTP

CASE STUDY

Challenge:
In December of 2010 Monoxivent received a request from Applied Science Engineering, Detroit, MI. They needed to design a corrosion resistant, insulated containment tray for 8" scum pipe and two 4" hot water pipes. The total length being 1,600 feet running between 7 buildings and they needed an easy access cover system.



Solution:
Monoxivent worked through many concept changes, with the final design completed and ready for bid in June of 2013. Monoxivent was awarded the contract in January of 2014 and the final project completed the following November.

The tray and cover sections are double wall urethane foam insulated (R-7), and the 36" x 18" deep tray sections are incased in reinforced concrete. The embedment angles, cross supports and the building wall pass through sleeves are all 1/4" thick #316 stainless steel. Monoxivent also designed and supplied 220 each fiberglass pipe support brackets. From start to finish Monoxivent was an integral part of this project from concept, design, manufacturing and on site..

The Wastewater Treatment Plant, located at 9300 W. Jefferson Avenue in Detroit, is the largest single-site wastewater treatment facility in the United States. Of the more than $22.5 million spent to ready the plant for its February 1940 startup, $10 million was spent on plant construction with the balance going to complete the network of huge interceptor sewers through which a combined stream of storm and sanitary wastewater flows to the plant from communities throughout metro Detroit.

Columbus, OH

OHIO STATE PHOTO LAB

CASE STUDY

Challenge:
The photo lab at Ohio State University required a corrosion resistant solution to capturing noxious fumes from large photo development sinks. The problem was that the students occasionally needed unlimited access to the sinks in order to flip larger prints.



Solution:
Monoxivent designed and fabricated two 8' long custom corrosion resistant FRP hoods that were mounted on heavy duty stainless steel slides suspended from overhead stainless steel brackets. This allowed there to be the ability to capture the caustic fumes while at the same time allowing the students to easily move the hoods away from the process when needed.

Louisville, KY

GEA PLENUM

CASE STUDY

Challenge:
The Lubrizol Corporation was looking for new solutions for drying fine CPVC powder. The process generates hydrochloric acid fumes. Monoxivent was approached by GEA Group in an attempt to find a solution. In using steel componentry for their process, it was discovered that a hydrochloric acid by product was deteriorating the equipment. Replacement equipment would need to be more-costly 316L or other expensive steels. Additionally, the powder would clog the duct work at various system points and workers were having problems breaking the clogs free without stopping the process and internally clearing the system.



Solution:
Fiberglass was the material answer to the re-engineering of the system. The new design capitalized on the composite "basics" of being light weight and durable as well as chemically resistant to the acid fumes. Because of the durable flexibility of the duct, workers can now use rubber mallets to "hammer" the exterior of the duct to release material clogs without causing structural damage to the duct, thereby eliminating the need to shut down the process. The bottom line is more dependable corrosion resistant system with less down time.

Fort Madison, IA

CLIMAX SCRUBBER, DUCT

CASE STUDY



Challenge:
Climax Molybdenum, a Freeport-McMoRan Company, is the world's largest molybdenum conversion processing plant. Primary products at the facility, ammonium molybdate and ammonium sulphate are the most valuable commodities. Sulfuric acid and ammonia are part of the process and must be dealt with in a cost effective and environmentally safe way.



Solution:
Because of a long relationship in supplying composite materials, Monoxivent was asked by Climax to team with Southern Environmental, Inc., to find a solution. Southern Environmental designed a wet precipitator scrubber system and Monoxivent manufactured the vessel and the duct. Corrosion resistant fiberglass duct and process vessels have proven to be the best choice. The net result is a sound financial and environmental solution.

Tipton, IN

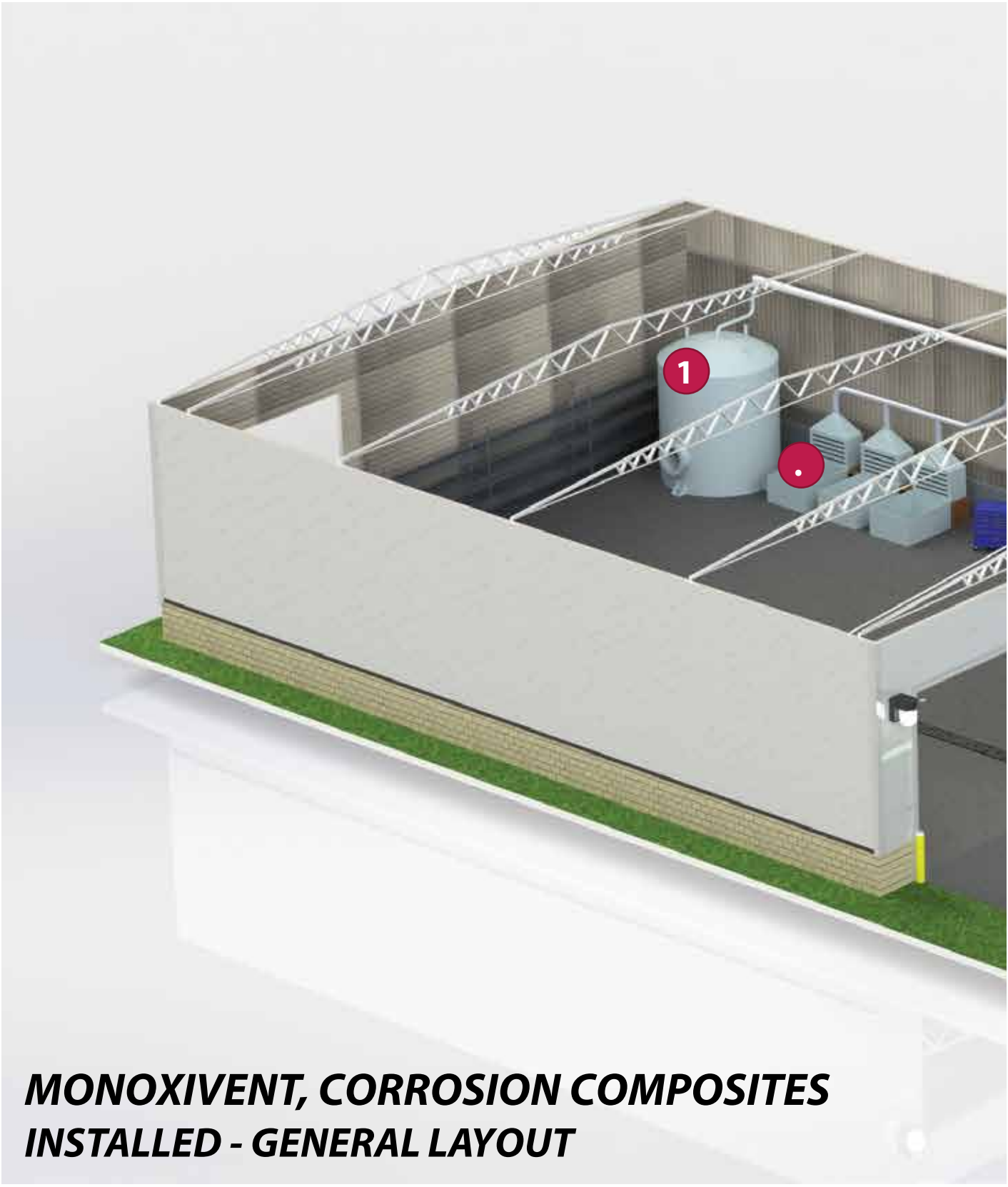
ST. JOHN THE BAPTIST CHURCH



CASE STUDY

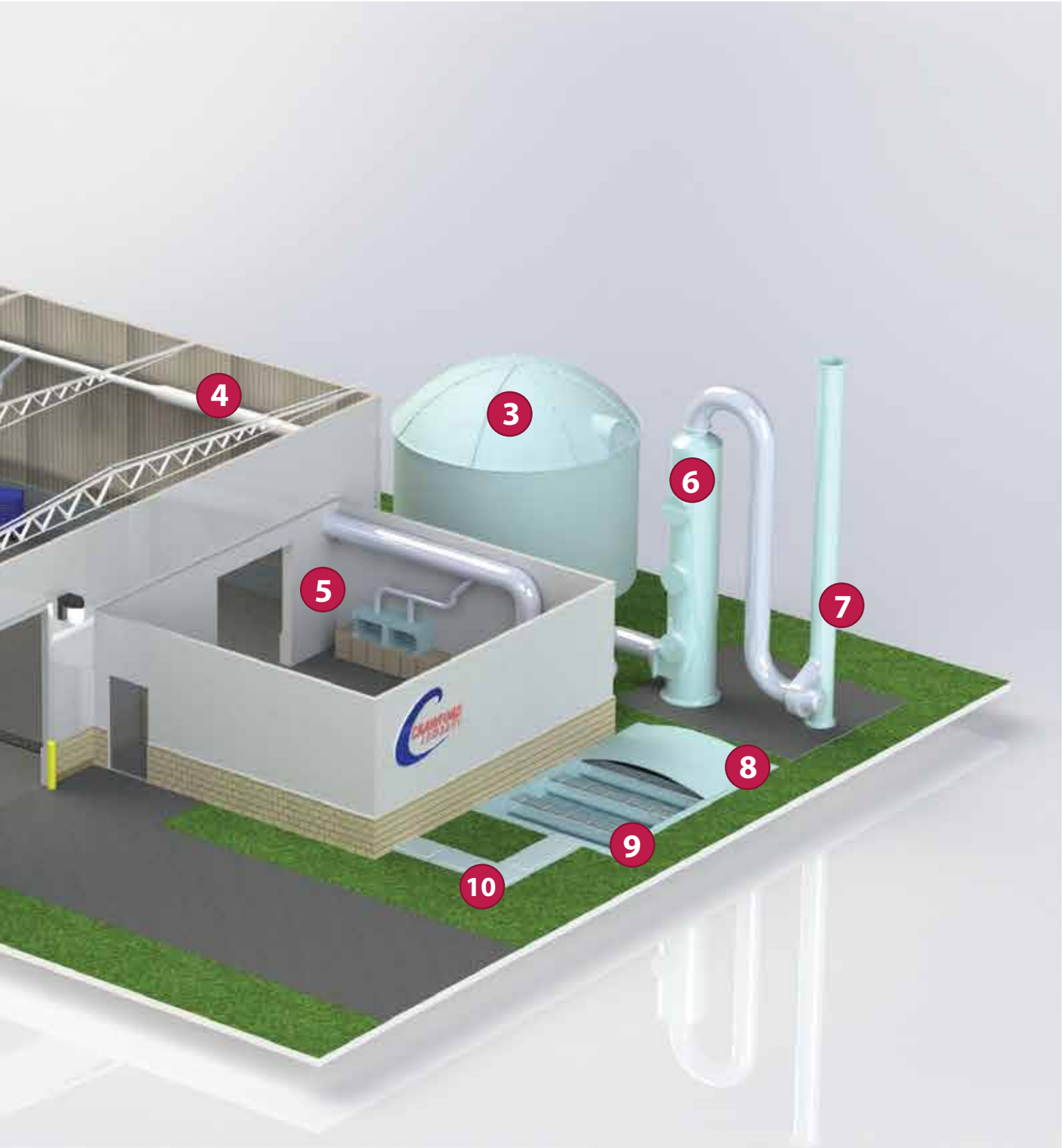
In 2016, it was decided that St. John the Baptist Church located in Tipton, IN was to be demolished and rebuilt. While many of the original furnishings and stained glass buildings were salvaged from the historic 1891 church and incorporated into the new building, the new Gothic styled church will include the most up-to-date technologies. Double wall insulated UnderDuct designed for direct burial is one of those technologies.

This project was sold through our Authorized Representative Langendorf Building Supply located in Indianapolis, IN and will be installed by BRS Mechanical from Tipton, IN. There is no doubt that this duct will provide the longevity of service that this iconic community landmark truly deserves.



MONOXIVENT, CORROSION COMPOSITES INSTALLED - GENERAL LAYOUT

1. Chemical Storage Tank
2. Plating Line, Tank and Hoods



3. Domed Tank Cover
4. Exhaust Duct
5. Lab Duct
6. Scrubber
7. Stack
8. Arched Tank Cover
9. Troughs
10. Flat Channel Cover









FRP Solutions
by Monoxivent®

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