The FLOWTITE GRP piping products and accessories sold by the AMIANTIT Group offer many advantages for the use in stormwater applications.

The worldwide product availability of FLOWTITE GRP pipes has established projects all over the world. This case study brochure represents only a small extract of the available references.

Many other countries around the world realized a huge number of installations and an increasing number of projects are recently in work.

Further information about additional references and case studies can be found on our website at www.amiantit.com!

Additional information about product advantages and the available product range of our GRP pipes for many applications can be requested from your local dealer.
# Case Study -1-

| **PROJECT NAME:** Combined sewer overflow system in Gattendorf |
| **Community/Country:** Germany / Gattendorf |
| **Amiantit location:** AMITECH Germany |
| **Description:** Combined sewer overflow system with storage capacity of 325 m³. |
| **application:** Stormwater |
| **transported medium:** Raw water |
| **working pressure:** 1 bar |
| **type of project:** new installation |
| **demanded standards / specifications / approvals:** DIN 14364, DIN EN 1610 |
| **Special requirement on pipe-system:** Buoyancy protection; fast installation; special construction; individual solution |
| **project value in US$:** US$ 216,410 |

**chosen pipe system:**
- GRP round filament
- light weight
- corrosion resistance
- flow characteristics
- mech. properties
- high product life; fast and easy installation; economical; variable system/material; less maintenance as result of self cleaning effect

**Project owner:** Community Gattendorf  
**consultant / engineer:** Ing. Bruchner, Konratsreuth  
**contractor:** Vogländische Straßen-, Tief- und Rohrleitungsbau GmbH, Rodewisch  

## Pipe Details - material:  
- **Total pipeline length (m):** 165  
- **Diameter DN min / max (mm):** 1600  
- **Pressure PN min / max (bar):** 1  
- **Stiffness SN min / max (N/m²):** 10000  
- **joint types:** FLOWTITE standard coupling  
- **fittings used:** Elbows, manholes

### Installation Details:  
- **type:** open trench  
- **laying depth (m):** 0.70 - 1.70  
- **native soil type:** Soil class G3  
- **backfill soil type / compaction:** Soil class G1  
- **Project duration:** 4 months  
- **Year start / end:** 2009
**Case Study -2-**

<table>
<thead>
<tr>
<th><strong>PROJECT NAME:</strong></th>
<th>Cascade sewer with storage capacity and overflow in Berg Hardermannsgrün</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Community/Country:</strong></td>
<td>Germany / Berg Hardermannsgrün</td>
</tr>
<tr>
<td><strong>Amiantit location:</strong></td>
<td>AMITECH Germany</td>
</tr>
<tr>
<td><strong>Description:</strong></td>
<td>Worldwide first &quot;cascade sewer with storage capacity and overflow&quot; to defuse hydraulic bottlenecks in sewer systems; a combination of pipes with storage capacity and special sewer constructions from the continuously winded pipes of the FLOWTITE system.</td>
</tr>
<tr>
<td><strong>application:</strong></td>
<td>Stormwater</td>
</tr>
<tr>
<td><strong>transported medium:</strong></td>
<td>Raw water</td>
</tr>
<tr>
<td><strong>working pressure:</strong></td>
<td>1 bar</td>
</tr>
<tr>
<td><strong>type of project:</strong></td>
<td>new installation</td>
</tr>
<tr>
<td><strong>demanded standards / specifications / approvals:</strong></td>
<td>DIN 14364</td>
</tr>
<tr>
<td></td>
<td>DIN EN 1610</td>
</tr>
<tr>
<td><strong>Special requirement on pipe-system:</strong></td>
<td>Buoyancy protection; fast installation; special construction; individual solution</td>
</tr>
<tr>
<td><strong>project value in US$:</strong></td>
<td>USS 743,000</td>
</tr>
</tbody>
</table>

**chosen pipe system:**
- GRP round filament
- light weight
- high product life; fast and easy installation; economical; variable system/material; less maintenance as result of self cleaning effect

**Project owner:** Community: Berg

**consultant / engineer:** USS Consult, Nailsa

**contractor:** Vogtlandische Straßen-, Tief- und Rohrleitungsbau GmbH, Rodewisch

**Pipe Details - material:**
- Total pipeline length (m): 750
- Diameter DN min / max (mm): 500 / 2900
- Pressure PN min / max (bar): 1
- Stiffness SN min / max (N/mm²): 5000
- joint types: FLOWTITE standard coupling
- fittings used: none

**Installation Details:**
- type: open trench
- laying depth (m): 1 - 5.80
- native soil type: Soil class G3
- backfill soil type / compaction: Soil class G1 (sand & gravel); grain size of 8/16mm and 16/32mm
- Project duration: 12 months
- Year start / end: 2007 / 2008

**Summary:**
- Worldwide first "cascade sewer with storage capacity and overflow": a 1000 cubic meters holding, about 150 meters cascade sewer with storage capacity and overflow, which extends about three area levels; components:
  - An inflow construction
  - 3 parts of cascade sewer with storage capacity and overflow DN 2900
  - 2 cascade constructions
  - 1 manhole with regulation
  - 1 overflow with wellspring pot DN 2900
## Case Study -3-

<table>
<thead>
<tr>
<th><strong>PROJECT NAME:</strong></th>
<th>Overflow system for stormwater in Langgöns</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Community/Country:</strong></td>
<td>Germany / Langgöns</td>
</tr>
<tr>
<td><strong>Amiantit location:</strong></td>
<td>AMITECH Germany</td>
</tr>
<tr>
<td><strong>Description:</strong></td>
<td>Underground GRP reservoir for a motorway deposition, with 800m³ storage capacity, originally tendered in concrete.</td>
</tr>
<tr>
<td><strong>application:</strong></td>
<td>Stormwater</td>
</tr>
<tr>
<td><strong>transported medium:</strong></td>
<td>Raw water</td>
</tr>
<tr>
<td><strong>working pressure:</strong></td>
<td>1 bar</td>
</tr>
<tr>
<td><strong>type of project:</strong></td>
<td>new installation</td>
</tr>
</tbody>
</table>
| **demanded standards / specifications / approvals:** | DIN 14364  
DIN EN 1610 |
| **Special requirement on pipe-system:** | Buoyancy protection; fast installation; special construction; individual solution |
| **project value in US$:** | US$ 509,200 |

**chosen pipe system:** GRP round filament  
**why our product?**  
- high weight  
- high product life; fast and easy installation; economical;

**Project owner:** ASV, Schotten  
**consultant / engineer:** ASV, Schotten  
**contractor:** Herzog, Marburg

### Pipe Details - material:
- **Total pipeline length (m):** 170  
- **Diameter DN min / max (mm):** 2700  
- **Pressure PN min / max (bar):** 1  
- **Stiffness SN min / max (N/m):** 10000  
- **joint types:** FLOWTITE standard coupling  
- **fittings used:** none

### Installation Details:
- **type:** open trench  
- **laying depth (m):** 2.0  
- **native soil type:** Soil class G3  
- **backfill soil type / compaction:** Soil class G1 and G2  
- **Project duration:** 1.5 months  
- **Year start / end:** 2008
## Case Study -4-:

**PROJECT NAME:** Overflow system for stormwater in Lübbenau (1,200m³)

**Community/Country:** Germany / Lübbenau

**Amiantit location:** AMITECH Germany

**Description:**
- **application:** Stormwater
- **transported medium:** Raw water
- **working pressure:** 1 bar
- **type of project:** new installation
- **demanded standards / specifications / approvals:**
  - DIN 14364
  - DIN EN 1610

**chosen pipe system:**
- GRP round filament
- light weight
- high product life; fast and easy installation;
- economical; less maintenance as result of self cleaning effect

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**Project owner:** Kaufland Logistik GmbH, Lübbenau

**consultant / engineer:** Meinberg + Meinberg Planungs- und Projektsteuerungsgesellschaft

**contractor:** STRABAG AG Berlin-Brandenburg, Niederlassung Lübben

**Pipe Details - material:**
- **Total pipeline length (m):** 255
- **Diameter DN min / max (mm):** 2500
- **Pressure PN min / max (bar):** 1
- **Stiffness SN min / max (N/m²):** 6000

**Installation Details:**
- **type:** open trench
- **laying depth (m):** 5.5
- **native soil type:** Soil class G2
- **backfill soil type / compaction:** Soil class G2
- **Project duration:** 1 month
- **Year start / end:** 2009
## Case Study -5-  

**PROJECT NAME:** Frevar Rabekken  
**Community/Country:** Fredrikstad, Norway  
**Amiantit location:** APS Norway  
**Description:** Pipes with manholes in a special design.  

<table>
<thead>
<tr>
<th><strong>application:</strong></th>
<th>Stormwater</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>transported medium:</strong></td>
<td>Raw water</td>
</tr>
<tr>
<td><strong>working pressure:</strong></td>
<td>1 bar</td>
</tr>
<tr>
<td><strong>type of project:</strong></td>
<td>new installation</td>
</tr>
<tr>
<td><strong>demanded standards / specifications / approvals:</strong></td>
<td>EN 1796</td>
</tr>
<tr>
<td><strong>Special requirement on pipe-system:</strong></td>
<td>Manholes</td>
</tr>
<tr>
<td><strong>project value in US$:</strong></td>
<td>US$ 180,000</td>
</tr>
</tbody>
</table>

**chosen pipe system:**  
- GRP round filament  
- light weight  
- corrosion resistance  

**Project owner:** Frevar KF, Fredrikstad  
**consultant / engineer:** Cowi AS, Fredrikstad  
**contractor:** Leif Grimsrud AS, Fredrikstad  

### Pipe Details - material:  
- **Total pipeline length (m):** 700  
- **Diameter DN min / max (mm):** 600  
- **Pressure PN min / max (bar):** 1  
- **Stiffness SN min / max (N/m²):** 10000  
  - **joint types:** FLOWTITE standard coupling  
  - **fittings used:** Special designed manholes

**Installation Details:**  
- **type:** open trench  
- **trench dimensions (m):** 2.5  
- **laying depth (m):** 1.7 - 2.0  
- **native soil type:** Clay  
- **backfill soil type / compaction:** Gravel  
- **Project duration:** 5 months  
- **Year start / end:** 2009

**Summary:** Specially tailor - made manholes
Case Study -6-

<table>
<thead>
<tr>
<th>PROJECT NAME:</th>
<th>Modlinska street Warsaw</th>
</tr>
</thead>
<tbody>
<tr>
<td>Community/Country:</td>
<td>Warsaw, Poland</td>
</tr>
<tr>
<td>Amiantit location:</td>
<td>AMITECH Poland</td>
</tr>
<tr>
<td>Description:</td>
<td>Rainwater retention tank for rainwater drained from northern road branch of Modlinska Street in Warsaw.</td>
</tr>
<tr>
<td>application:</td>
<td>Stormwater</td>
</tr>
<tr>
<td>transported medium:</td>
<td>Raw water</td>
</tr>
<tr>
<td>working pressure:</td>
<td>1 bar</td>
</tr>
<tr>
<td>type of project:</td>
<td>new installation</td>
</tr>
<tr>
<td>demanded standards / specifications / approvals:</td>
<td>AT-2002-1285-04</td>
</tr>
<tr>
<td>Special requirement on pipe-system:</td>
<td>DN 3000mm, tightness and large rainwater retention capability</td>
</tr>
<tr>
<td>project value in US$:</td>
<td>US$ 535,000</td>
</tr>
</tbody>
</table>

Project owner: ZDM Warsaw
consultant / engineer: BAKS Sp. z o.o. Warsaw
contractor: AJMAX Sp. z o.o., Warsaw

Pipe Details - material:
- Total pipeline length (m): 2,562
- Diameter DN min / max (mm): 200 / 3000
- Pressure PN min / max (bar): 1
- Stiffness SN min / max (Nm²): 10000
- joint types: FLOWTITE standard couplings
- fittings used: Manholes

Installation Details:
- type: open trench
- trench dimensions (m): 3.8
- laying depth (m): 7
- native soil type: Medium sand
- backfill soil type / compaction: Medium sand Proktor 98%
- quality measures during installation: DN 3000mm retention tank leak tightness test
- Project duration: 5 months
- Year start / end: 2008

Summary: First use of DN 3000 mm FLOWTITE GRP pipe for a retention tank in Poland.
Case Study -7-

**PROJECT NAME:** Unilever Poznań

**Community/Country:** Poznań, Poland

**Amiantit location:** AMITECH Poland

**Description:** Retention tank for the Unilever plant buildings.

- **application:** Stormwater
- **transported medium:** Raw water
- **working pressure:** 1 bar
- **type of project:** new installation
- **demanded standards / specifications / approvals:** AT-15-7880/2008
- **project value in US$:** US$ 250,000

**chosen pipe system:**
- GRP round filament
- light weight
- corrosion resistance
- flow characteristics
- mech. properties

**Project owner:** Unilever Poland SA, Poznań

**consultant / engineer:** EKOPROJEKT, Poznań

**contractor:** PHARMGAS SA, Poznań

**Pipe Details - material:**
- **Total pipeline length (m):** 102
- **Diameter DN min / max (mm):** 2400
- **Pressure PN min / max (bar):** 1
- **Stiffness SN min / max (N/m²):** 5000
  - joint types: FLOWTITE standard couplings, Straub joints
  - fittings used: Manholes

**Installation Details:**
- **type:** open trench
- **trench dimensions (m):** 35 x 25 m
- **laying depth (m):** 4.5
- **native soil type:** Sand
- **backfill soil type / compaction:** Sand
- **Project duration:** 12 months
- **Year start / end:** 2007 / 2008

**Summary:** The retention tank made of GRP pipes is now saving the investor from inundation during heavy rain falls.
## Case Study -8-  

<table>
<thead>
<tr>
<th>PROJECT NAME:</th>
<th>Wilanowska street Warsaw</th>
</tr>
</thead>
<tbody>
<tr>
<td>Community/Country:</td>
<td>Warsaw, Poland</td>
</tr>
<tr>
<td>Amiantit location:</td>
<td>AMITECH Poland</td>
</tr>
<tr>
<td>Description:</td>
<td>Installation of DN 3000mm rainwater retention tank in Wilanowska Street in Warsaw.</td>
</tr>
<tr>
<td>application:</td>
<td>Stormwater</td>
</tr>
<tr>
<td>transported medium:</td>
<td>Raw water</td>
</tr>
<tr>
<td>working pressure:</td>
<td>1 bar</td>
</tr>
<tr>
<td>type of project:</td>
<td>new installation</td>
</tr>
<tr>
<td>demanded standards / specifications / approvals:</td>
<td>AT-2002-1285-04</td>
</tr>
<tr>
<td>Special requirement on pipe-system:</td>
<td>tightness and large rainwater volume retention capability</td>
</tr>
<tr>
<td>project value in US$:</td>
<td>US$ 1,340,000</td>
</tr>
</tbody>
</table>

**Project owner:** ZDM Warsaw  
**consultant / engineer:** AZET Sp. z o.o., Warsaw  
**contractor:** Pol-Aqua, Piaseczno  

### Pipe Details - material:  
- **Total pipeline length (m):** 1,766  
- **Diameter DN min / max (mm):** 200 / 3000  
- **Pressure PN min / max (bar):** 1  
- **Stiffness SN min / max (N/m²):** 10000  
- **joint types:** FLOWTITE standard couplings  
- **fittings used:** Manholes  

### Installation Details:  
- **type:** open trench  
- **laying depth (m):** 5.0  
- **native soil type:** Medium sand  
- **backfill soil type / compaction:** Medium sand Proctor 98%  
- **quality measures during installation:** DN 3000 mm retention tank leak tightness test  
- **Project duration:** 6 months  
- **Year start / end:** 2009  

### Summary:  
The biggest current installation in Poland for retention tanks made of DN 3000mm FLOWTITE GRP pipes.  

**chosen pipe system:**  
- GRP round filament  
- Meyer Polycrte pipes DN 400  

**other materials in this project:**  
- light weight  
- corrosion resistance  
- flow characteristics  
- mech. properties
## Case Study -13-  

**PROJECT NAME:** Combined Sewer Overflow system Laufenbach  

**Community/Country:** Gossau, Switzerland  
**Amiantit location:** AMITECH Germany  
**Description:** Installation of a stormwater tank.  

<table>
<thead>
<tr>
<th>application:</th>
<th>Stormwater</th>
</tr>
</thead>
<tbody>
<tr>
<td>transported medium</td>
<td>Raw water</td>
</tr>
<tr>
<td>working pressure</td>
<td>1 bar</td>
</tr>
<tr>
<td>type of project:</td>
<td>new installation</td>
</tr>
<tr>
<td>demanded standards / specifications / approvals:</td>
<td>SIA</td>
</tr>
<tr>
<td>Special requirement on pipe-system:</td>
<td>lightweight components, fast and easy installation</td>
</tr>
<tr>
<td>project value in US$:</td>
<td>US$ 260,000</td>
</tr>
</tbody>
</table>

**chosen pipe system:**  
- GRP round filament  
- light weight  
- high product life; fast and easy installation; complete system; potable water capability

**Project owner:** Community of Gossau  
**consultant / engineer:** Benz AG, Zürich  
**contractor:** Künzli AG, Gossau

### Pipe Details - material:  
- **Total pipeline length (m):** 400  
- **Diameter DN min / max (mm):** 1400  
- **Pressure PN min / max (bar):** 1  
- **Stiffness SN min / max (N/m²):** 10000  
- **joint types:** FLOWTITE standard couplings  
- **fittings used:** none

### Installation Details:  
- **type:** open trench  
- **trench dimensions (m):** 2.00 x 4.20  
- **laying depth (m):** 3.4  
- **native soil type:** Soil class G2  
- **backfill soil type / compaction:** encased in concrete  
- **Project duration:** 2 months  
- **Year start / end:** 2008
Handbook is intended as a guide only. All values listed in the product specifications are nominal. Unsatisfactory product results may occur due to environmental fluctuations, variations in operating procedures, or interpolation of data. We highly recommend that any personnel using this data have specialised training and experience in the application of these products and their normal installation and operating conditions. The engineering staff should always be consulted before any of these products are installed to ensure the suitability of the products for their intended purpose and applications. We hereby state that we do not accept any liability, and will not be held liable, for any losses or damage which may result from the installation or use of any products listed in this handbook as we have not determined the degree of care required for product installation or service. We reserve the right to revise this data, as necessary, without notice. We welcome comments regarding this handbook.

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