



CONDRON TWINWALL PIPE

TESTING, BEDDING, HANDLING & STORAGE

Striving for Quality since 1969



TESTING METHODS

PRESSURE TESTING

All pipe runs should be Air Pressure Tested in accordance with the project specific requirements.

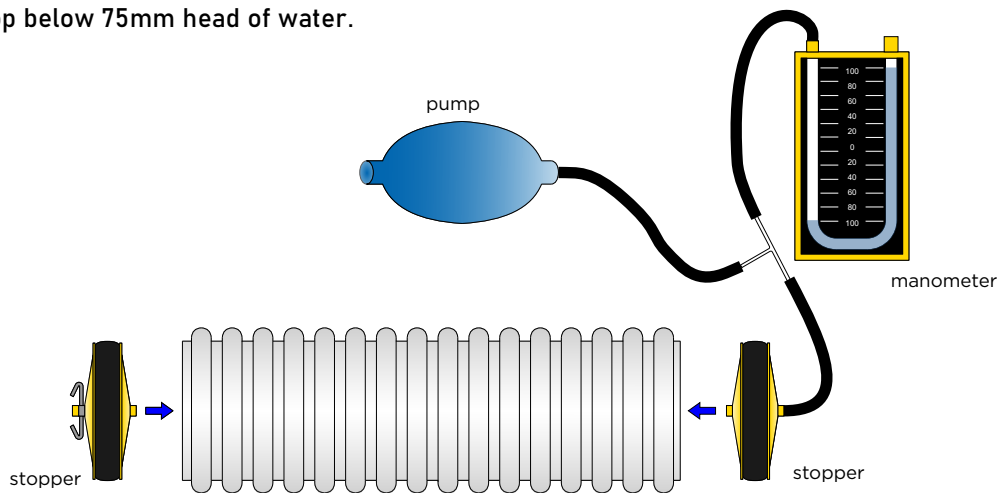
NOTE: All testing should be carried out periodically and prior to Backfilling

Recommendations on Pressure Testing

Condron Concrete Works Twinwall Pipes may be tested using conventional air or water testing.

AIR TEST METHOD

1. Block the ends of the pipe, including any branches, using sealed, expanding stoppers.
2. Fill a U-tube manometer with water to the correct level, ensuring that there are no trapped air bubbles in the water.
3. Connect the manometer to the appropriate port of one of the stoppers.
4. Increase the pressure in the pipe until a pressure of 100mm of water (0.01 Bar) is reached.
5. Allow the pressure to stabilise for several minutes, increasing the pressure to 100mm head of water if it drops.
6. Record any change in pressure over a 5 minute period. Without further pumping it should not drop below 75mm head of water.



Air test problems are generally due to faulty equipment or test procedures and the following advice may be of assistance.

- ❖ Always install pipes in accordance with Condron Concrete Works Twinwall recommendations and the applicable site specific specification.
- ❖ Check that the test equipment does not leak and is in proper working order by testing a short length of pipe submerged in a water bath.
- ❖ Ensure that the test stoppers, tubes and pump are in good condition and that all seals are correctly fitted.
- ❖ Ensure that the pipe bores are free from dirt and debris that could affect sealing of the test bungs.
- ❖ Ensure that the test stoppers are placed tightly, squarely and in the pipe barrel, not the fittings.
- ❖ Ensure that all openings are properly sealed, including those to be buried underground, prior to testing and backfilling (e.g. gully and lateral pipe connections).
- ❖ The air test is more sensitive than water tests and failure is not conclusive. The air test is very sensitive to temperature changes and must not be performed unless the pipe temperature is stable.



TESTING METHODS

Failures due to testing immediately after backfilling a pipe that has previously been heated in the sun are common. A 1°C temperature change in the air inside the pipe will result in a pressure change sufficient for the test to fail.

WATER TEST METHOD

1. Appropriate stoppers should be fitted, blocking the pipe ends and any junctions.
2. A standpipe or flexible pipe should be fitted at the top end of the pipeline, a maximum of 1.2 metres above the crown at the high end and 6 metres at the low end of the pipeline.
3. The pipe should be filled with water and allowed to stabilise for 2 hours, topping it up as required.
4. The loss of water from the pipeline should be determined by measuring the quantity of water added to the pipeline to maintain the level during the 30 minute test period.

The rate of water loss should not exceed 1 litre per hour per linear metre of drain per metre of nominal pipe diameter.



TESTING METHODS

MAXIMUM PERMISSIBLE WATER LOSSES DURING 30 MINUTE WATER TEST

DIAMETER (mm)	MAXIMUM LOSS (l/m)
100	0.05
150	0.075
225	0.1125
300	0.15
375	0.1875
400	0.2
450	0.225
500	0.25
600	0.3
750	0.375
900	0.45
1050	0.525

BEDDING REQUIREMENTS

Installation of the Condron Concrete Twinwall Road Drainage system is typically carried out in accordance with the NRA Manual of Contract Documents for Road Works MCDRW (see Figure 4).

Granular pipe bed and surround material, consisting of natural and/or recycled coarse aggregate or recycled concrete aggregate, should have specification as per Table 6 (in accordance with clause 503.3 of the MCDRW).

STANDARD DETAILS

Granular pipe bed and surround material, consisting of natural and/or recycled coarse aggregate or recycled concrete aggregate, should have the following specification (in accordance with clause 503.3 MCDRW).

For pipes on beds shown on Drawing Number RCD/500/2 in MCDRW
BS EN 13242:2002+A1:2007, Coarse aggregate (clause 4.3.2)

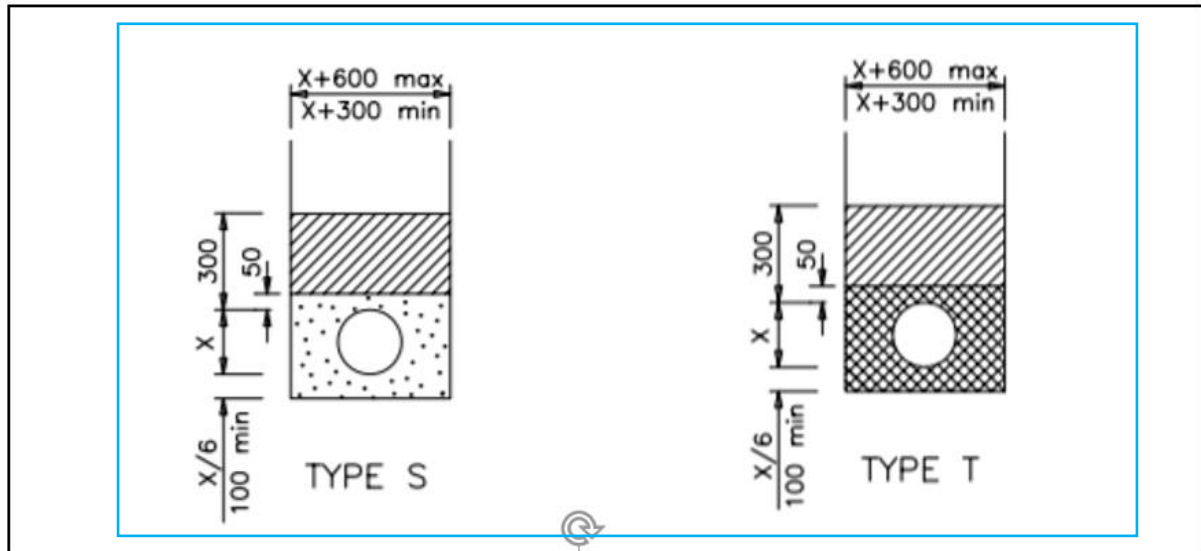
Nominal pipe diameter (mm)	Aggregate Size	
	Graded	Single
Up to 140		
>140 to 400	2/14 or 4/20	4/10, 6/10 or 10/20
>400	2/14, 4/20 or 4/40	4/10, 6/14, 10/20 or 20/40

- a) Category for general grading requirements – GC80-20
- b) Category for maximum values of fines content
 - i. Gravel – f1.5
 - ii. Crushed rock, recycled aggregate – f4
- c) A resistance to fragmentation in Category LA50 in accordance with BS EN 13242:2002+A1:2007, clause 5.2 and Table 9;
- d) A water-soluble sulphate content of less than 1.9 grams of sulphate (as SO₃) per litre when tested in accordance with BS EN 1744-1, clause 10;
- e) All other requirements in Category NR.







BEDDING DETAILS: SURFACE WATER DETAILS

For typical laying, trench and backfilling specification details, reference should be made to the figure below and the MCHW, Volume 3, Drawing Number F1 (Types T and S).



KEY

-  Granular material to S.H.W. Clause 503.3(i).
-  Concrete to S.H.W. Clause 503.3 (iii)
-  Material to S.H.W. Clause 503.3(ii). e.g. sand
-  Class 8 material to S.H.W. Clause 503.3(iv).

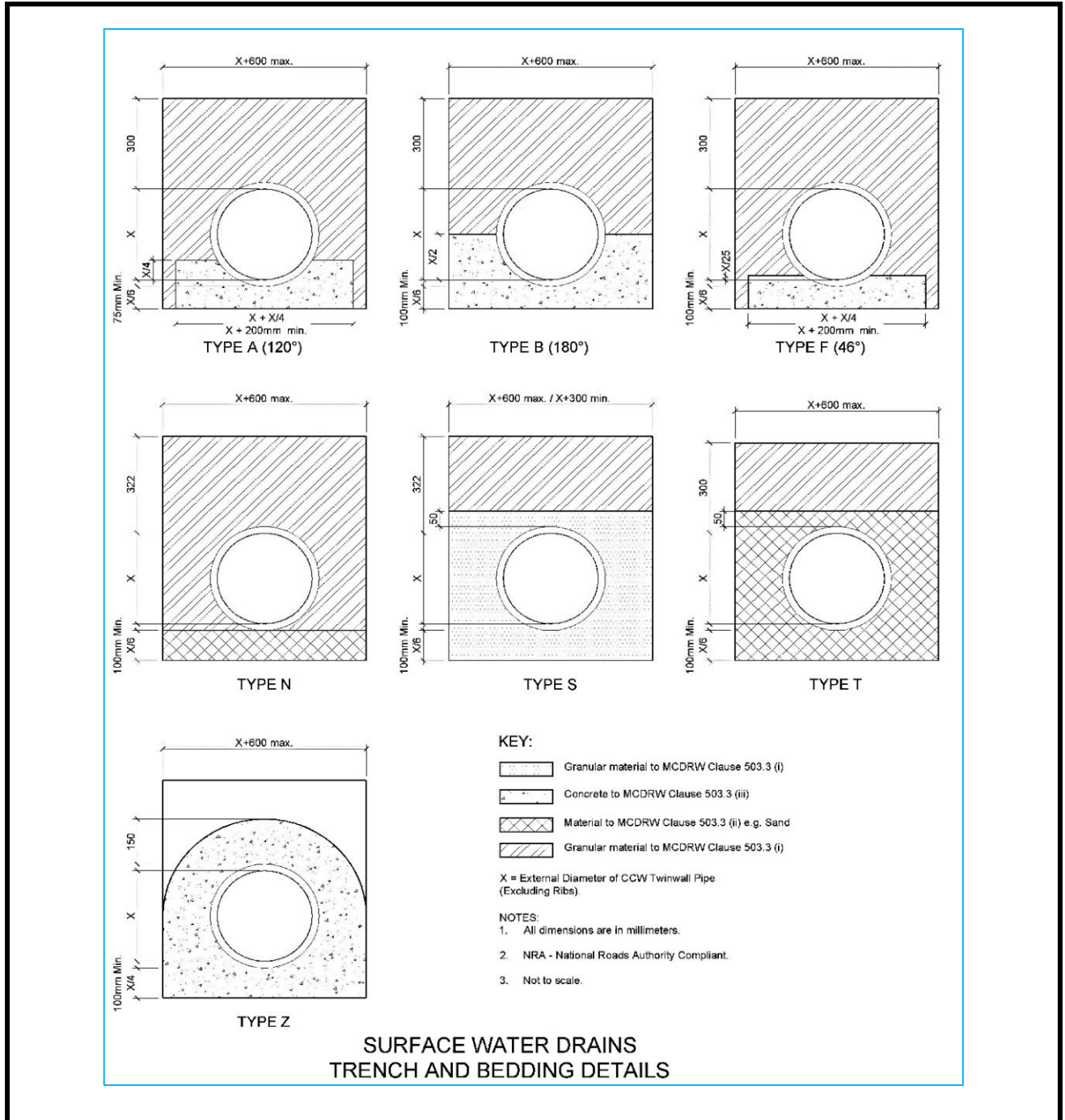
NOTES:

1. All dimensions are in millimetres.
2. Dimension X is the external diameter of the pipe.
3. The minimum or maximum width of the trench applies on or below a line 300mm above the outside top of the pipe. Above the 300mm line - the trench backfill material shall be as described in clause 505 of SHW.
4. The concrete bed or surround may extend to the sides of the trench or be of minimum width. Class 8 material is to be used to fill any voids so formed.



BEDDING DETAILS: SURFACE WATER DETAILS

Standard bedding details Condron Concrete Works Twinwall Pipes to the NRA (TII) Manual of Contract Documents for Road Works (MCDRW).



NOTES:

All Dimensions are in millimetres.

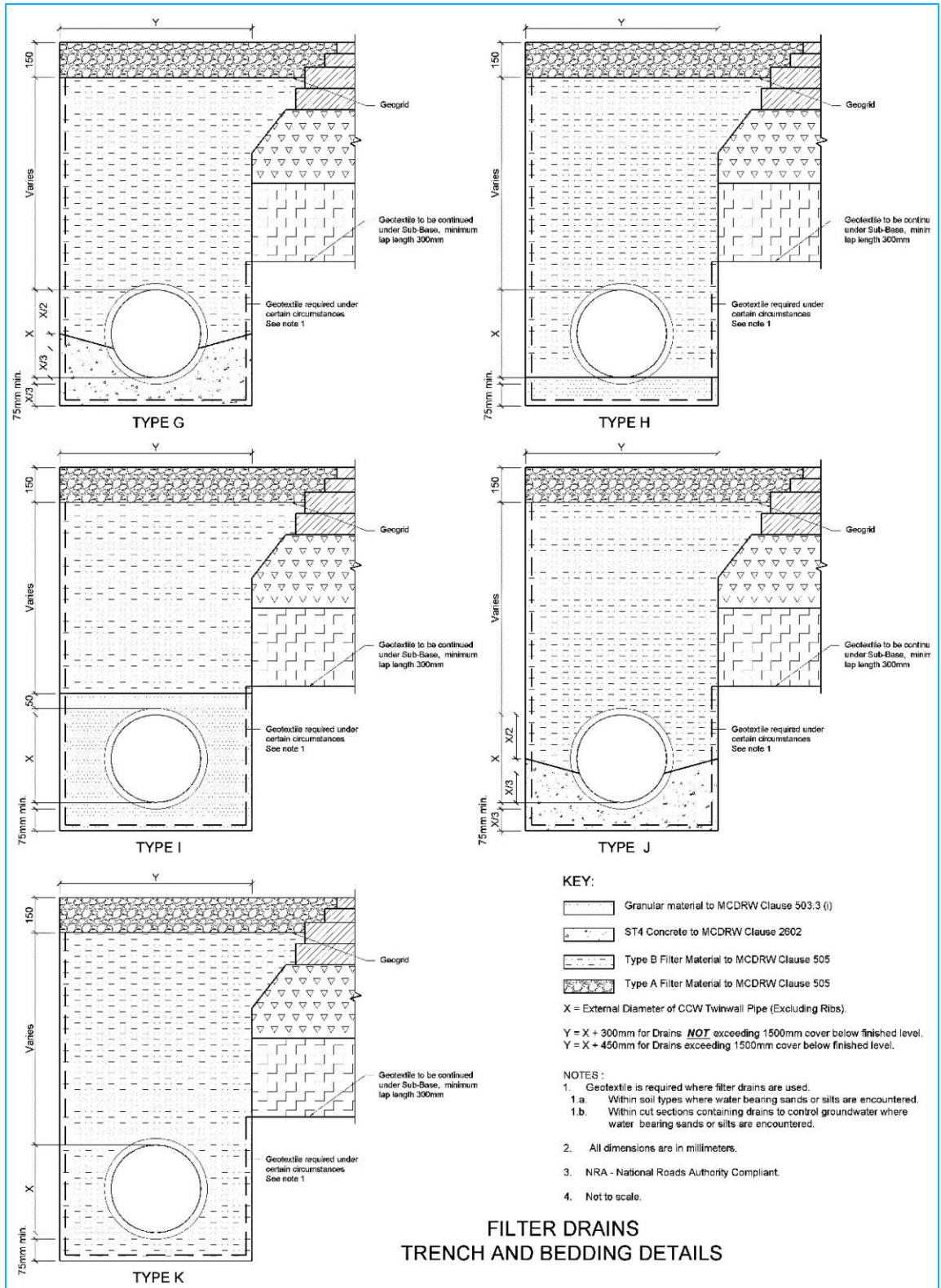
X = pipe diameter

Type S is the preferred granular bed and surround detail.

Type Z is recommended where depths of cover are less than 1.2m. Joint filler board shall be placed in contact with the end of the socket at a pipe joint and shall extend through the full thickness of the concrete in contact with the pipe. These should be placed at each pipe joint.

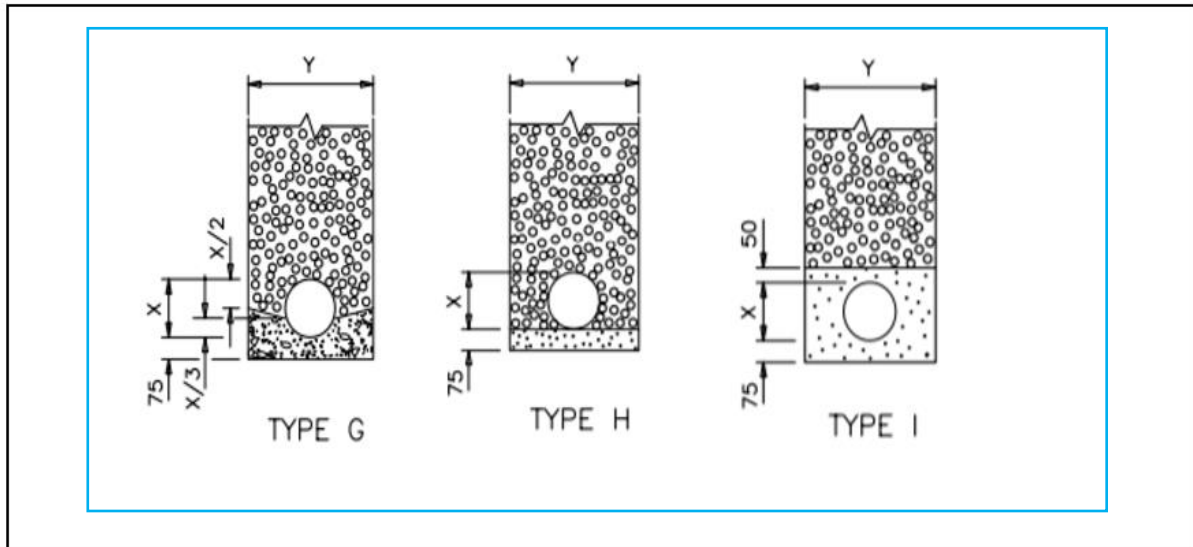
BEDDING DETAILS: FILTER DRAINS

Standard bedding details Condron Concrete Works Twinwall Pipes to the NRA (TII) Manual of Contract Documents for Road Works (MCDRW).






BEDDING DETAILS: FILTER DRAINS

For typical laying, trench and back filling specification details, reference should be made to the figure below and the MCHW, Volume 3, Drawing Number F2 (Types G, H and I).



KEY

-  Type A or C filter material to S.H.W. Clause 505 or granular material to S.H.W. Clause 503.3(i).
-  Type B filter material to S.H.W. Clause 505.
-  ST2 concrete to S.H.W. Clause 2602.

Notes:

1. All dimensions are in millimetres.
2. Dimension X is the external diameter of the pipe.
3. Pipes shall comply with the filter drain pipes in table 5/1 of the S.H.W.
4. Pipes are to be laid with slots of perforations upwards where a concrete bed is used. For other beds the slots shall be oriented as described in appendix 5/1.
5. Minimum drain width $Y = X + 300$ for drains not exceeding 1.5m cover below finished level. $Y = X + 450$ for drains exceeding 1.5m cover below finished level.



BEDDING INFORMATION

SIDE-FILL PLACEMENT

After a section of the pipe has been installed and successfully tested, the side-fill, the most important structural component of the fill, should be placed. The material should be placed evenly on both sides of the pipe, and compacted in accordance with the specification. Single-sized coarse granular materials, such as stone or gravel, may achieve the necessary density without compaction. Compaction of these materials is recommended where trench walls are relatively soft and weak. For well-graded granular soils compaction will be necessary. It is important that compacting equipment does not come into contact with the pipe at any stage of compaction. The side-fill material should normally extend a minimum 100mm above the pipe crown.

BACKFILL PLACEMENT

The backfill material that lies within 300mm of the pipe crown should be free from particles stones exceeding 40mm diameter. Heavy compaction should not be applied until the cover to the pipe is a minimum of 300mm in order to avoid the imposition of large stresses to the pipe. The material that is placed more than 300mm above the pipe crown should be placed and compacted in layers not greater than 300mm thick or in compliance with the specification. It is important that trench sheets or trench box, if used to support the trench, are removed progressively prior to compaction of the side-fill and backfill. Ref: Clause 505 of MCDRW Ireland or MCHW for U.K.



HANDLING, STORAGE AND TRANSPORTATION

COMPOSITION

The products are composed of plastic materials possibly admixtures.

HAZARDS

The finished products as supplied are of an inert nature and inherently non-hazardous to health. The individual items are generally heavy and many are so shaped that they can roll easily. Correct handling and stacking procedures as given below must be employed.

HANDLING/USE PRECAUTIONS

The weight and surface nature of the products requires sufficient PPE including the use of hard hat, protective gloves and footwear to avoid injuries.

- The manual handling of such loads may cause an injury and should be avoided .Good slinging and lifting practices should always be used and the following points observed:
- Products must not be rolled off vehicles or around sites.
- Use correct craneage for offloading vehicles. Properly constructed 'C' hooks with spreader bar or canvas/fabric slings with a central lift are recommended.
- Where lifting points are provided, all the lifting points must be used.
- Where lifting points are not provided, then suitable slings (canvas/fabric) should be used around the product and never through it. Correct craneage must always be utilised.
- Care should be taken when breaking down product stacks either on the delivery vehicle or on site.
- Consideration should be given to wind exposure where bails are stacked for storage.
- When cutting or surface treating products by hand or machine, dust and flying fragments may be created. In such circumstances, respiratory protective equipment should be worn. Suitable eye protection should be worn to protect against dust and/or flying fragments.
- Provide Trench Supports where necessary.

Ensure compliance which the Health Safety and Welfare at Work Act 2005.

Handling, storage and transportation shall be in accordance with National Health and Safety Guidelines.

When long-term storage is envisaged, Condron Twinwall perforated and unperforated pipes and couplers should be protected from direct sunlight.

If protection cannot be provided, consideration must be given to the effects of daily exposure to direct sunlight:

- Up to 3 months — negligible UV degradation but possible extreme surface temperatures of up to 80°C may cause some localised distortion
- 3 months to 12 months — may have significant effect on the impact resistance and physical properties
- Over 12 months — damage may occur unless protection provided.

HANDLING, STORAGE AND TRANSPORTATION

The manufacturer has the option of adding chemicals to provide enhanced UV stability on request.

The Pipes are generally delivered in pre-packed bundles and should be retained in their packaging until installation.

SAFETY

Health and Welfare at Work (Construction) Regulations 2005. These notes are a brief summary of safety precautions based on the 2005 Regulations made under the Safety, Health and Welfare at Work Act 2005. It is the responsibility of employers, employees, and the self-employed, to ensure that legal requirements are complied with. Particular attention is drawn to the Safety, Health and Welfare at Work (Construction) Regulations 2013 and other legislation setting out the duties of owners, employers and employees in relation to the construction and maintenance of buildings.

Above notes are given for general information guidance only, and are not to be taken as comprehensive. All Condron Concrete Works Drivers have Personal Protective Equipment such as Hard Hats, Steel - Toe Boots, Safety Jackets and have completed SOLAS Safe -pass Training.

Please refer to material safety data sheet that can be supplied on request for further information.



Condron Concrete Works Twinwall Pipes can be delivered with any order for roof tiles, OG Pipes, S&S Pipes, Manhole Rings, Manhole covers and road gullies on the same delivery.

Structural Twinwall Pipe Loading per bale

Internal Pipe →	Approx. Number of Structural Twinwall pipes per bale
94-110mm	100
100mm	77
150mm	36
225mm	14
300mm	8
375mm	5
450mm	4
600mm	2
750mm	1
900mm	1

Please contact the office or local Sales Representative for more details.

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Condron Concrete is continually innovating and improving its products and services. Therefore, we reserve the right to change product specifications without notice. Please contact us for the latest information or visit www.condronconcrete.ie

