

TECHNICAL DATA SHEET

DELTA®-DRAIN 6000 HI-X

For Heavy Duty Horizontal and Vertical Drainage Applications.

MATERIAL

DELTA®-DRAIN 6000 HI-X is a high performance, three-dimensional, 2-layer drainage composite. It consists of a dimpled drainage core and a high strength needle-punched polypropylene (PP) geotextile (non-woven) with excellent filter characteristics. The drainage core is made from a special co-polymer polypropylene that provides high impact and tear resistance, and is unaffected by environmental stress cracking. The non-clogging geotextile is fully bonded to the dimpled drainage core, which prevents it from being pushed into the flow channels by the load of the overburden material.

PROPERTIES

DELTA®-DRAIN 6000 HI-X provides a continuous path for water discharge and relieves hydrostatic pressure buildup. The non-woven geotextile allows water to pass freely into the drainage core. At the same time, it prevents the passage of soil particles to ensure that the drainage core doesn't get clogged. The geotextile meets AASHTO M288 Class 3 for elongation > 50%. DELTA®-DRAIN 6000 HI-X is the ideal solution for applications where high drainage capacity is required. Subsurface water can pass easily into the drainage core where gravity feeds it into the drainage system at the bottom of the foundation.

DELTA®-DRAIN 6000 HI-X is highly pressure resistant and able to withstand loads of up to 15,000 psf (723 kN/m²). The product is rot-proof.

APPLICATION

It is suitable for applications in underground wall construction, caisson, pile and lagging wall drainage, retaining walls, bridge abutments, and as relief layer for hydrostatic pressure on any subsurface structure. It will also function as protection board in a waterproofing system. DELTA®-DRAIN 6000 HI-X comes in two roll sizes (4'x50' or 6'x50'). Its flat side is installed against the wall surfaces. In case of blind side applications such as soldier pile or lagging walls, or caisson walls, the drainboard is installed with its geotextile side facing the soil retention system.



Technical Data

Product name	DELTA®-DRAIN 6000 HI-X	
Color	black	
Material	Drainage core: co-polymer polypropylene	
	Geotextile: Polypropylene	
Dimple height	approx. 2/5" (10 mm)	ASTM D1777-96 ASTM D5199
Compressive strength	15,100 psf (723 kN/m²)	ASTM D6364-06
Drainage core impact resistance	2.9 J mean failure energy at 5°C	ASTM D4226-09
Drainage core maximum tearing strength	MD 550 N CD 800 N	ASTM D5884-04a
Drainage core stress cracking resistance	504 hours @ 156 kPa (No cracking at test termination)	SAGEOS GD 001-2012
Geotextile grab tensile strength	120 lbs (534 N)	ASTM D4632
Geotextile elongation	50%	ASTM D4632
Geotextile trapezoidal tear	50 lbs (223N)	ASTM D4533
Geotextile CBR puncture strength	310 lbs (289 N)	ASTM 6241
Geotextile apparent opening size (AOS)	70 sieve size (0.212 mm)	ASTM D4751-99
Geotextile water flow rate	135 gal/min/ft² (5500 l/min/m²)	ASTM D4491-99
Permittivity	1.70 sec⁻¹	ASTM D449
Geotextile weight (typical)	4.0 oz/yd² (135 g/m²)	ASTM D5261-92
Geotextile UV resistance	70% @ 500 h	ASTM D4355
Geocomposite water flow rate @ hydr. grad. 1.0	18 gal/min/ft (223 l/min/m)	ASTM D4716-99
Geocomposite water flow rate @ hydr. grad. 0.1	3.2 gal/min/ft (40 l/min/m)	ASTM D4716-99
Toxicity	non-toxic, non-polluting	
Roll size / weight	4' x 50' (1.2 x 15.25 m) 41 lbs (19 kg)	
	6' x 50' (1.83 x 15.25 m) 63 lbs (28 kg)	
Service life expectancy	> 25 years (at pH between 4 and 9 and temperature below 77°F / 25°C). Do not expose to UV light for more than 30 days.	

DELTA® products support sustainable and energy-efficient building practices, including efforts toward achieving LEED® certification (LEED® for New Construction & Major Renovations, LEED® for Core and Shell, LEED® for Existing Buildings and LEED® for Homes).

For technical support, call our technical support team at 1-888-4DELTA4 (1-888-433-5824) extension 326, or visit www.dorken.com.

INSTALLATION INSTRUCTIONS

DELTA[®]-DRAIN 2000, 6000, 6200 HI-X

NOTES

The installation instructions for DELTA[®]-DRAIN 2000, 6000, or 6200 HI-X are intended only as a guide and are for the convenience of contractors, specifiers, and other interested parties. The final application and details are the sole responsibility of the design authority on record for the project.

Installers must have experience installing drainage composites with a minimum of 5 projects (recommended).

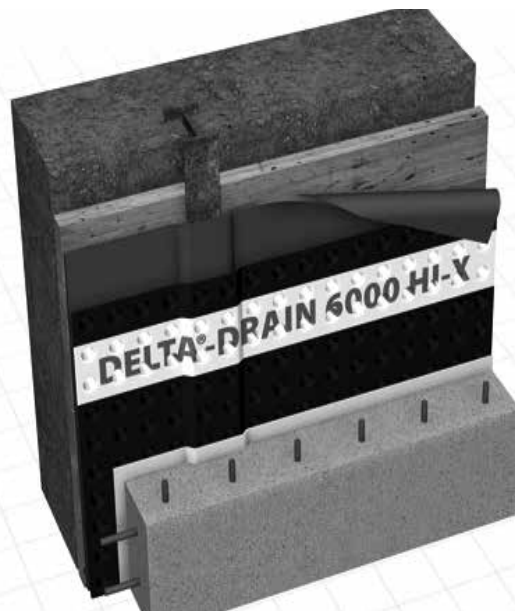
Ensure protrusions that may penetrate the membrane are removed from substrate.

Foundation Wall Drainage Composite Applications (Positive Side):

- Install drainage composite with flat side against wall, geotextile facing the soil, and over waterproofing. Drainage composite should be installed starting at the anticipated grade level down to footing, and in other locations as indicated by construction plans.
- Start at lowest point and work to top, running length of sheets horizontally or vertically, draping over top of footing.
- Position the first row of DELTA[®]-FAST'ners 8" (200 mm) below the top of DELTA[®]-DRAIN 000's HI-X. Fasten drainage composite using DELTA[®]-FAST'ners with concrete nails in a "W" pattern 12" (305 mm) o/c.
Distance between rows should be 4" to 6" (100 mm to 150 mm).
- At end laps (vertical), strip back the geotextile of adjoining layer. Cut back the core of the DELTA[®]-DRAIN 000's HI-X by 4" (100 mm). Butt the adjacent layer overlapping the geotextile only. Fasten in place with DELTA[®]-FAST'ners at 12" (305 mm) o/c along overlap.
- At end laps (horizontal), overlap the drainage composite by 6" (150 mm) in a downward shingle fashion. Do not interlock the dimples.
- Install sheets without gaps, wrinkles, creases or tears.
- Flash top edge and vertical terminations with DELTA[®]-MOLD STRIP.

Blind Side Applications (Negative Side):

- On lagging, pile, or earth forms, and other "blind" wall construction, install drainage composite with geotextile in contact with soil retention system.
Seal butt joints on core side of drainage composite continuously with 4" (100 mm) DELTA[®]-MULTI BAND tape.
- At vertical joints, butt edges together and tape drainage composite with 4" (100 mm) DELTA[®]-MULTI BAND.
- At horizontal joints fasten lower drainage composite along top edge. Butt upper drainage core with the lower drainage core. Overlap the geotextile in a shingle fashion to prevent soil particulates from entering the air gap, potentially clogging the drainage core. Tape the horizontal joint with 4" (100 mm) DELTA[®]-MULTI BAND.
- Use galvanized nails. Nail length will vary depending upon the surface to which the prefabricated drain is being attached. Galvanized nails should have flat heads, and washers or wood strapping may be used to prevent the nail head from being driven through the drainage composite.
- At end laps, cut back the core of the DELTA[®]-DRAIN 000's HI-X by 4" (100 mm). Fold the remaining geotextile in a manner that prevents soil particulates from entering the air gap. Fasten in place 12" (300 mm) o/c.



Dörken Systems Inc.
4655 Delta Way
Beamsville, Ontario
L3J 0T6
1-(905) 563-3255
Fax: (905) 563-5582
info@dorken.com
www.dorken.com

The information printed in this brochure reflects product information and specifications at the date of printing. The manufacturer reserves the right to make changes when necessary. All rights reserved.

DELTA[®]-branded quality products
manufactured by Dörken.

A DÖRKENGROUP company

DÖRKEN SYSTEMS INC. GUIDE NOTE: This master specification section includes DÖRKEN SYSTEMS INC. GUIDE NOTES identified as “DÖRKEN SYSTEMS INC. GUIDE NOTE” for information purposes and to assist the specification writer in making appropriate decisions. The DÖRKEN SYSTEMS INC. GUIDE NOTE always immediately precedes the text to which it is referring. The section serves as a guideline only and should be edited with deletions and additions to meet specific project requirements.

DÖRKEN SYSTEMS INC. GUIDE NOTE: This specification section follows the recommendations of the Construction Specifications Canada, Manual of Practice including MasterFormat™, SectionFormat™, and PageFormat™. Optional text is indicated by square brackets [____]; delete the optional text including the brackets in the final copy of the specification. Delete the DÖRKEN SYSTEMS INC. GUIDE NOTES in the final copy of the specification. Trade/brand names with appropriate product model numbers, styles and types are used in DÖRKEN SYSTEMS INC. GUIDE NOTES and in the specification text Article or Paragraph titled “Acceptable Material”.

DÖRKEN SYSTEMS INC. GUIDE NOTE: This specification Section is based upon the Dörken Systems Inc., DELTA®-DRAIN 6000 HI-X.

1 GENERAL

1.01 SUMMARY OF WORK

- .1 This Section specifies below grade drainage composite sheets, plaza deck and planter drainage composite sheets, and accessories.

1.02 RELATED REQUIREMENTS

DÖRKEN SYSTEMS INC. GUIDE NOTE: Include in this Paragraph only those sections and documents that directly affect the work of this section. If a reader of this section could reasonably expect to find a product or component specified in this section, but it is actually specified elsewhere, then the related section number(s) should be listed in the Paragraph below. Do not include Division 00 Documents or Division 01 Sections since it is assumed that all technical sections are related to all project Division 00 Documents and Division 01 Sections to some degree. Refer to other documents with caution since referencing them may cause them to be considered a legal part of the Contract. Edit the following paragraphs to suit specific project conditions.

- .1 Section [____].

1.03 ALTERNATIVES

- .1 Product Alternatives in accordance with Section 01 23 00 - Alternatives.

DÖRKEN SYSTEMS INC. GUIDE NOTE: In the following Article, include only those reference standards which appear in the finished version of the project specification.

1.04 REFERENCE STANDARDS

- .1 American Association of Textile Chemists and Colorists (AATCC)
 - .1 AATCC 127 [2008], Water Resistance: Hydrostatic Pressure Test.
- .2 ASTM International (ASTM).
 - .1 ASTM C1311 - [2010], Standard Specification for Solvent Release Sealants.
 - .2 ASTM D1621 - [2010], Standard Test Method for Compressive Properties Of Rigid Cellular Plastics.
 - .3 ASTM D1777 - [1996(2011)e1], Standard Test Method for Thickness of Textile Materials.
 - .4 ASTM D4226 - [2011], Standard Test Methods for Impact Resistance of Rigid Poly(Vinyl Chloride) (PVC) Building Products.
 - .5 ASTM D3776 / D3776M - [2009ae2], Standard Test Methods for Mass Per Unit Area (Weight) of Fabric.
 - .6 ASTM D3786 / D3786M - [2009], Standard Test Method for Bursting Strength of Textile Fabrics-Diaphragm Bursting Strength Tester Method.

- .7 ASTM D4355 - [2007], Standard Test Method for Deterioration of Geotextiles by Exposure to Light, Moisture and Heat in a Xenon Arc Type Apparatus.
- .8 ASTM D4491 - [1999a(2009)], Standard Test Methods for Water Permeability of Geotextiles by Permittivity.
- .9 ASTM D4533 - [2011], Standard Test Method for Trapezoid Tearing Strength of Geotextiles.
- .10 ASTM D4632 - [2008], Standard Test Method for Grab Breaking Load and Elongation of Geotextiles.
- .11 ASTM D4716 - [2008], Standard Test Method for Determining the (In-plane) Flow Rate per Unit Width and Hydraulic Transmissivity of a Geosynthetic Using a Constant Head.
- .12 ASTM D4751 - [2004], Standard Test Method for Determining Apparent Opening Size of a Geotextile.
- .13 ASTM D4833 - [2007], Standard Test Method for Index Puncture Resistance of Geomembranes and Related Products.
- .14 ASTM D5261 - [2010], Standard Test Method for Measuring Mass per Unit Area of Geotextiles.
- .15 ASTM E96/96M-[2010], Standard Test Methods for Water Vapor Transmission of Materials.
- .3 Canadian General Standards Board (CGSB).
 - .1 CGSB 19-GP-14M - [1984], Sealing Compound, One Component, Butyl-Polyisobutylene Polymer Base, Solvent Curing.
- .4 Canada Green Building Council (CaGBC).
 - 1. LEED Canada-NC Version 1.0-[2004], LEED (Leadership in Energy and Environmental Design): Green Building Rating System Reference Package For New Construction and Major Renovations.

1.05 ADMINISTRATIVE REQUIREMENTS

- .1 Co-ordination: Co-ordinate work of this Section with work of other trades for proper time and sequence to avoid construction delays.
- .2 Pre-installation Meeting: Convene pre-installation meeting after Award of Contract and one week prior to commencing work of this Section to verify project requirements, substrate conditions and co-ordination with other building sub-trades, and to review manufacturer's written installation instructions.
 - .1 Comply with Section 01 31 19 - Project Meetings and co-ordinate with other similar pre-installation meetings.
 - .2 Notify attendees 2 weeks prior to meeting and ensure meeting attendees include as minimum:
 - .1 Owner;
 - .2 Consultant;
 - .3 Drainage composite installer;
 - .4 Manufacturer's Technical Representative.
 - .3 Ensure meeting agenda includes review of methods and procedures related to drainage composite installation including co-ordination with related work.
 - .4 Record meeting proceedings including corrective measures and other actions required to ensure successful completion of work and distribute to each attendee within 1 week of meeting.

[DÖRKEN SYSTEMS INC. GUIDE NOTE](#): Article below includes submittal of relevant data to be furnished by Contractor.

1.06 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Make submittals in accordance with Contract Conditions and Section 01 33 00 - Submittal Procedures.
- .2 Product Data: Submit product data including manufacturer's literature for drainage composite materials and accessories, indicating compliance with specified requirements and material characteristics.
 - .1 Submit list on drainage composite manufacturer's letterhead of materials and accessories to be incorporated into Work.
 - .2 MSDS report.
 - .3 Include product names, types and series numbers.
 - .4 Include preparation instructions and recommendations, installation methods, and storage and handling requirements.

- .5 Include contact information for manufacturer and their representative for this Project.
- .3 Samples:
 - .1 Submit [100 x 100] mm minimum sample of each type of drainage composite.
 - .2 Submit [300] mm long minimum sample of each type of tape.
 - .3 Submit each type of fastener.
- .4 Test Reports:
 - .1 Submit evaluation service reports or other independent testing agency reports showing compliance with specified performance characteristics and physical properties.
- .5 Field Reports: Submit manufacturer's field reports within 3 days of each manufacturer representative's site visit and inspection.
- .6 Sustainable Design (LEED).
 - .1 LEED Submittals: In accordance with Section [01 35 21 – LEED Requirements]
- .7 Installer Qualifications:
 - .1 Submit letter verifying installer's experience with work similar to work of this Section.

1.07 CLOSEOUT SUBMITTALS

- .1 Operation and Maintenance Data: Supply maintenance data for drainage composite materials for incorporation into manual specified in Section 01 78 00 - Closeout Submittals.

DÖRKEN SYSTEMS INC. GUIDE NOTE: If LEED is not a part of the project delete the following Paragraph in its entirety as well as the reference standards in 1.03.6.

- .2 Sustainable Design Closeout Documentation (LEED).
 - .1 Provide calculations on end-of-project recycling rates, salvage rates, and landfill rates for work of this Section demonstrating percentage of construction wastes which were recycled.
 - .2 Submit verification from recycling facility showing receipt of materials.
- .3 Record Documentation: In accordance with Section 01 78 00 - Closeout Submittals.
 - .1 List materials used in drainage composite work.
 - .2 Warranty: Submit warranty documents specified.

1.08 QUALITY ASSURANCE

- .1 Installer Quality Assurance: Work experience from [5] projects minimum with work similar to work of this Section.

DÖRKEN SYSTEMS INC. GUIDE NOTE: If LEED is not a part of the project delete the following Paragraph in its entirety as well as the reference standards in 1.03.6.

- .2 Sustainability Standards Certification (LEED).
 - .1 LEED submittals: In accordance with Section 01 35 21 - LEED Requirements.

DÖRKEN SYSTEMS INC. GUIDE NOTE: Use the following paragraph only if drainage composite extends more than 3,000 square metres, and is of a repetitive or critical nature.

- .3 Mock-up: Construct full size 3 m x 3 m mock-up showing drainage composite using proposed procedures, materials and quality of work where directed by Consultant [and in accordance with Section 01 43 00 - Quality Assurance].
 - .1 Include examples of joints, inside corners and outside corners.
 - .2 Purpose: To judge quality of work and material installation.
 - .3 Allow Consultant [24] hours minimum prior to inspection of mock-up.
 - .4 Do not proceed with work prior to receipt of written acceptance of mock-up by Consultant.

- .5 When accepted, mock-up will demonstrate minimum standard of quality required for Work of this Section.
- 6. Approved mock-up will [not] remain part of finished work.

DÖRKEN SYSTEMS INC. GUIDE NOTE: The following Article although not part of Quality Assurance, can be used to enhance the quality of materials by ensuring that they are delivered and handled properly at the work site.

1.09 DELIVERY STORAGE AND HANDLING

- .1 Delivery and Acceptance Requirements:
 - .1 Deliver material in accordance with Section 01 61 00 - Common Product Requirements.
 - .2 Deliver materials and accessories in manufacture's original packaging with identification labels intact and in sizes to suit project.
- .2 Storage and Handling Requirements: Store materials off ground and protected from exposure to harmful weather conditions and at temperature conditions recommended by manufacturer.
 - .1 Ensure materials are protected from sunlight and UV radiation.
 - .2 Store and dispose of solvent-based materials, and materials used with solvent-based materials, in accordance with requirements of local authorities having jurisdiction.
- .3 Packaging Waste Management:

DÖRKEN SYSTEMS INC. GUIDE NOTE: For smaller projects that do not have a separate Section for waste management and disposal, delete the following paragraph.

- .1 Separate and recycle waste packaging materials in accordance with Section 01 74 19 - Construction Waste Management and Disposal.
- .2 Remove waste packaging materials from site and dispose of packaging materials at appropriate recycling facilities.

DÖRKEN SYSTEMS INC. GUIDE NOTE: For smaller projects that do not have a Waste Management Plan, delete the option referring to a Waste Management Plan.

- 3. Collect and separate for disposal paper and plastic material in appropriate on-site storage containers for recycling [in accordance with Waste Management Plan].

1.10 WARRANTY

- .1 Project Warranty: Refer to Contract Conditions for project warranty provisions.
- .2 Manufacturer's warranty: Submit, for Owner's acceptance, manufacturer's standard warranty document executed by authorized company official. Manufacturer's warranty is in addition to and not intended to limit other rights Owner may have under Contract Conditions.

DÖRKEN SYSTEMS INC. GUIDE NOTE: Coordinate article below with manufacturer's warranty requirements.

- .3 Warranty period: [10] years commencing on Date of Substantial Performance of Work.

2 PRODUCTS

2.01 MANUFACTURER

- .1 Manufacturer: Dörken Systems Inc., 4655 Delta Way, Beamsville, Ontario, L3J 0T6, Canada, Phone: 1-905-563-3255, Toll Free: 1-888-4DELTA4 (1-888-433-5824), e-mail: info@dorken.com , URL: <http://www.dorken.com>.

2.02 DESCRIPTION

- .1 Heavy-duty, high performance, black, 2 layer composite drainage sheet with dimpled non-clogging polypropylene drainage core and high-strength polypropylene non-woven geotextile.

2.03 PERFORMANCE CRITERIA

- .1 Environmental Stress Cracking of Plastics: [2000 hours] to ASTM D1693-08 Condition B
- .2 Drainage Core Impact Resistance of Rigid Poly Building Products; [2.9] J mean failure energy at 5°C to ASTM D4226-09
- .3 Drainage Core Maximum Tearing Strength: MD [550] N CD [800] N to ASTM D5884-04a
- .4 Drainage Core Stress Cracking Resistance: [504] hours @ 156 kPa [No Cracking at Test Termination] to SAGEOS GD 001-2012
- .5 Geotextile Permittivity: [2.0 sec⁻¹] to ASTM D4491.
- .6 Geotextile Water Flow Rate: [5703] L/min/m² to ASTM D4991.
- .7 Geotextile Ultraviolet Resistance: [70 % at 500 hrs] to ASTM D4355.
- .8 Geotextile Grab Tensile Strength: [445] N to ASTM D4632.
- .9 Geotextile Elongation: [60] % to ASTM D4632.
- .10 Geocomposite Water Flow Rate:
 - .1 At Hydraulic Gradient 1.0: [223] L/min/m to ASTM D4716.
 - .2 At Hydraulic Gradient 0.1: [40] L/min/m to ASTM D4716.
- .11 Geotextile Trapezoidal Tearing Strength: [200] N to ASTM D4533.

DÖRKEN SYSTEMS INC. GUIDE NOTE: When considering puncture resistance, ensure product specified is capable of supporting dynamic and static loads for intended use especially when using DELTA®-DRAIN 6000 HI-X in conjunction with plaza type decks which may have both static and dynamic loads..

- .12 Geotextile Puncture Resistance: [300] N to ASTM D4833.
- .13 Geotextile Mullen Burst Strength: [1482] kPa to ASTM D3786.
- .14 Nominal Geotextile Weight: [135] g/m² to ASTM D5261.
- .15 Geotextile Apparent Opening Size: [0.21] mm to ASTM D4751.
- .16 Working Temperature Range: Minus 30 °C to plus 80 °C.
- .17 Toxicity: Non-toxic, non-polluting to ASTM D4226.

2.04 MATERIALS

- .1 Black polypropylene sheet, stabilized against oxidation, dimpled throughout field of sheet; needle-punched polypropylene geotextile adhered to top of dimples.
 - .1 Dimpled Thickness: [10] mm.
 - .2 Dimpled Sheet Compressive Strength: [830] kN/m² to ASTM D 1621.
 - .3 Drainage Core: Polypropylene.
 - .4 Needle-punched Geotextile: Non-woven polypropylene.
- .2 Acceptable Material: Dörken Systems Inc., DELTA®-DRAIN 6000 HI-X.

DÖRKEN SYSTEMS INC. GUIDE NOTE: Edit the following Article to ensure that only accessories included in the project are specified.

2.05 ACCESSORIES

- .1 Fasteners: Nails and washers in accordance with drainage composite manufacturer's written recommendations.
- .2 Repair Tape: In accordance with drainage composite manufacturer's written recommendations.

DÖRKEN SYSTEMS INC. GUIDE NOTE: Specify DELTA®-MULTIBAND for repairs on blindside. Specify DELTA®-FLEXX-BAND for repairs and sealing around penetrations.

- .1 Acceptable Material: Dörken Systems Inc., [DELTA® -MULTIBAND] [DELTA® -FLEXX-BAND]

2.06 PRODUCT SUBSTITUTIONS

- .1 Substitutions: [In accordance with Section 01 23 13 - Product Substitution Procedures] [No substitutions permitted].

3 EXECUTION

3.01 INSTALLERS

DÖRKEN SYSTEMS INC. GUIDE NOTE: [Manufacturer] authorized installers use only [Manufacturer] manufactured or approved components. Other installers may substitute other manufacturer's materials.

- .1 Use only installers with project experience from [5] projects minimum with work similar to work of this Section.

3.02 EXAMINATION

- .1 Verification of Conditions: Verify that conditions of substrate previously installed under other Sections or Contracts are acceptable for drainage composite installation in accordance with manufacturer's written recommendations.
- .1 Visually inspect substrate in presence of Consultant.
 - .2 Inform Consultant of unacceptable conditions immediately upon discovery.
 - .3 Proceed with installation only when no standing water is present.
 - .4 Proceed with installation only after unacceptable conditions have been remedied and after receipt of written approval to proceed from Consultant.

3.03 PREPARATION

- .1 Clean surfaces "broom clean" prior to installation.
- .2 Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.
- .1 Remove projections larger than [6] mm; remove sharp edges.
 - .2 In concrete and masonry, patch cracks and holes to ensure suitable substrate in accordance with drainage composite manufacturer's written recommendations.
- .3 Mark installation locations on walls before starting installation.

DÖRKEN SYSTEMS INC. GUIDE NOTE: Edit the following Article to ensure that only applications included in the project are specified.

3.04 APPLICATIONS

- .1 Foundation Wall Drainage Composite Applications: Install drainage composite with flat side against wall over [waterproofing] [dampproofing] from bottom of wall to grade level, and in locations indicated.
- .2 Split Slab Applications: Install horizontal application drainage composite between mud slab and finish slab with flat side against waterproofing and fabric side up.
- .3 Planter Applications: Install drainage composite with flat side against planter wall inside planters, over waterproofing.
- .4 Lagging Wall Applications: Install drainage composite with flat side against wall and fabric against lagging wall on entire surface of walls prior to installation of foundation wall.
- .5 Tunnels and Similar Applications: Install drainage composite with flat side against substrate on exterior side of waterproofing membrane by others at top and sides.

- .7 Plaza Decks: Install horizontal application drainage composite with flat side against deck over waterproofing membrane.

3.05 INSTALLATION

DÖRKEN SYSTEMS INC. GUIDE NOTE: Refer to the drainage composite manufacturer's current installation guide for detailed information regarding specific details.

- .1 Install drainage composite in accordance with drainage composite manufacturer's written recommendations.
- .2 Install only when temperature is above minus 30 °C.
- .3 General Drainage Composite Installation: Start at lowest point and work to top, running length of sheets horizontally or vertically. Do not overlap. Butt side and end laps, overlapping filter fabric.
- .1 Install sheets without gaps, wrinkles, creases or tears.
- .2 Align and abut layers.
- .3 Secure to substrate at edges and in field of sheet using fasteners and methods in accordance with drainage composite manufacturer's written recommendations.
- .1 Stagger fasteners in alternate rows.
- .4 Flash and seal top edges, around openings and penetrations, and other locations in accordance with drainage composite manufacturer's written recommendations.

DÖRKEN SYSTEMS INC. GUIDE NOTE: Use the following paragraph in addition to paragraph 3.04.4 above when drainage composite has dimples facing the substrate.

- .4 Drainage Composite: Install with protruding dimples on side facing substrate.
- .1 Fasten drainage composite using nails and washers interlocked with sheet at not more than [305] mm maximum on centre in accordance with drainage composite manufacturer's written instructions.

DÖRKEN SYSTEMS INC. GUIDE NOTE: Use the following paragraph if concrete is to be poured over the drainage composite.

- .1 Tape joints as required to prevent ingress of concrete.
- .2 At end laps, butt sheets together.
- .3 At side laps, butt sheets together.
- .4 At inside and outside corners, install sheet as close to substrate as possible without breaking.
- .5 At bottom of walls, extend single sheet from wall to drainage pipe, if any.

DÖRKEN SYSTEMS INC. GUIDE NOTE: In Blind side applications, dimples are always facing the substrate. The flat side faces the pour. Edit the following paragraph to suit project applications.

- .5 Drainage Composite: Install with protruding dimples and geotextile on side facing [away from] substrate.
- .1 On lagging, pile, or earth forms, and other "blind" wall construction, install drainage composite with geotextile in contact with soil retention system; seal butt joints on core side of drainage composite continuously with tape.
- .2 At vertical joints, butt and tape drainage composite.
- .3 At horizontal joints fasten lower drainage composite along top edge.
- .1 Overlap upper drainage geotextile over lower drainage geotextile in shingle fashion.
- .2 Fasten through both drainage composites at lower edge of upper sheet.
- .4 On low-slope split slab installations, install with filter fabric side up; overlap upper drainage geotextile over lower drainage geotextile in shingle fashion.
- .1 Anchor drainage composite sufficiently to prevent movement prior to and during installation of cover.
- .5 At plaza deck, ensure pavers are not installed directly on drainage composite.
- .1 Install fine gravel buffer layer between drainage composite and pavers.

DÖRKEN SYSTEMS INC. GUIDE NOTE: Ensure product specified is capable of supporting dynamic and static loads for intended use.

- .2 Ensure gravel buffer layer is sized to thickness to accommodate intended service loads.
- .3 Install with geotextile side up with butt joints.
- .6 Always wrap exposed edges with geotextile.

- .7 Cover drainage composite laps with geotextile and do not leave dimples or core exposed.
- .8 At bottom of walls, extend drainage composite from wall over footing to drainage pipe, if any.
- .6 Repairs to drainage composite: Apply patch made of same material and tape around penetrations and at joints.
- .7 Repairs to Geotextile: Tape matching material over damaged area.
- .8 After installation of reinforcing bars, inspect drainage composite and repair damaged sheet and geotextile.

3.06 FIELD QUALITY CONTROL

- .1 Field Inspection: Coordinate field inspection in accordance with Section [01 45 00 - Quality Control].

DÖRKEN SYSTEMS INC. GUIDE NOTE: Specify requirements if manufacturers are to provide field quality control with onsite personnel for instruction or supervision of product installation, application, erection or construction. Manufacturer field reports are included under PART 1, Action and Informational Submittals.

- .2 Manufacturer's Services:

DÖRKEN SYSTEMS INC. GUIDE NOTE: Use the following Paragraphs only when manufacture's field services are provided and are required to verify the quality of the installed components. Establish the number and duration of periodic site visits required by manufacturer and specify below. Consult manufacturer for services required. Delete if field services are not required.

- .1 Coordinate manufacturer's services with Section [01 45 00 - Quality Control].
 - .1 Have manufacturer review work involved in handling, installation, protection, and cleaning of drainage composite and accessories, and submit written reports in acceptable format to verify compliance of Work with Contract conditions.
- .2 Manufacturer's Field Services: Provide manufacturer's field services consisting of product use recommendations and periodic site visits for product installation review in accordance with manufacturer's instructions.
 - .1 Report any inconsistencies from manufacturer's recommendations immediately to Consultant.
- .3 Schedule site visits to review work at stages listed:
 - .1 After delivery and storage of drainage composite and accessories, and when preparatory work on which Work of this Section depends is complete, but before installation begins.
 - .2 Twice during progress of work at 25% and 60% complete.
 - .3 Upon completion of Work, after cleaning is carried out.
 - .4 Obtain reports within three days of review and submit immediately to Consultant.

3.07 CLEANING

DÖRKEN SYSTEMS INC. GUIDE NOTE: For smaller projects that do not have a separate Division 01 Section for cleaning, delete the reference to Section 01 74 00 – Cleaning in the following two Paragraphs.

- .1 Progress Cleaning: Perform cleanup as work progresses [in accordance with Section 01 74 00 - Cleaning and Waste Management].
 - .1 Leave work area clean at end of each day.
- .2 Final Cleaning: Upon completion, remove surplus materials, rubbish, tools, and equipment [in accordance with Section 01 74 00 – Cleaning and Waste Management].
- .3 Waste Management:
 - .1 Co-ordinate recycling of waste materials with 01 74 19 - Construction Waste Management and Disposal.
 - .2 Collect recyclable waste and dispose of or recycle field generated construction waste created during construction or final cleaning related to work of this Section.
 - .3 Remove recycling containers and bins from site and dispose of materials at appropriate facility.

3.08 PROTECTION

- .1 Do not leave installed drainage composite exposed to sunlight for more than 30 days after installation.
 - .1 Complete backfill operation.
- .2 Prior to backfilling, inspect drainage composite for tears and other damage and repair.
- .3 Ensure backfilling does not damage drainage composite.
 - .1 Backfill and compact in lifts.
 - .2 Replace drainage composite damaged during backfilling.
- .4 Protect installed products and accessories from damage during construction.
- .5 Repair damage to adjacent materials caused by drainage composite installation.

END OF SECTION 07 10 13 – DRAINAGE COMPOSITE

Technical Data

	DELTA®-DRAIN 6000 HI-X		
Color	black		
Material	Drainage core: co-polymer polypropylene Geotextile: polypropylene		
Dimple height	approx. 2/5" (10 mm)	ASTM D1777-96 ASTM D5199	
Compressive strength	15,100 psf (723 kN/m ²)	ASTM D6364-06	
Drainage core impact resistance	2.9 J mean failure energy at 5 °C	ASTM D4226-09	
Drainage core maximum tearing strength	MD 550 N CD 800 N	ASTM D5884-04a	
Drainage core stress cracking resistance	504 hours @ 156 kPa (No cracking at test termination)	SAGEOS GD 001-2012	
Geotextile grab tensile strength	120 lbs (534 N) MD & CD	ASTM D4632	
Geotextile elongation	50 % MD & CD	ASTM D4632	
Geotextile trapezoidal tear	50 lbs (223 N) MD & CD	ASTM D4533	
Geotextile CBR puncture strength	310 lbs (1380 N)	ASTM 6241	
Geotextile apparent opening size (AOS)	70 sieve size (0.212 mm)	ASTM D4751-99	
Geotextile water flow rate	135 gal/min/ft ² (5500 l/min/m ²)	ASTM D4491-99	
Permittivity	1.70 sec ⁻¹	ASTM D449	
Geotextile weight (typical)	4.0 oz/yd ² (135 g/m ²)	ASTM D5261-92	
Geotextile UV resistance	70 % @ 500 h	ASTM D4355	
Geocomposite water flow rate @ hydr. grad. 1.0	18 gal/min/ft (223 l/min/m)	ASTM D4716-99	
Geocomposite water flow rate @ hydr. grad. 0.1	3.2 gal/min/ft (40 l/min/m)	ASTM D4716-99	
Toxicity	non-toxic, non-polluting		
Roll size / weight	4' x 50' (1.2 x 15.25 m) / 41 lbs (19 kg) 6' x 50' (1.83 x 15.25 m) / 63 lbs (28 kg)		
Service life expectancy	> 25 years (at pH between 4 and 9 and temperature below 77 °F / 25 °C). Do not expose to UV light for more than 30 days.		

Drain Board Reference Chart

Dörken	DELTA®-DRAIN 2000 HI-X	DELTA®-DRAIN 6000 HI-X	DELTA®-DRAIN 6200 HI-X	DELTA®-DRAIN 9000 HI-X	DELTA®-DRAIN
Carlisle	CCW Miradrain 2000	CCW Miradrain 6000	CCW Miradrain 6200	CCW Miradrain 9000	N/A
American Wick Drain	Ameridrain 200	Ameridrain 500	Ameridrain 520	Ameridrain 650	N/A
J Drain	200	400	420	700	N/A
Terrafix	Terradrain 200	Terradrain 600	Terradrain 620	Terradrain 900	Terradrain 1000T
Tremco	TremDrain	TremDrain 1000	TremDrain 1000 PF	TremDrain 9000	N/A
Grace Hydroduct	N/A	Hydroduct 200	Hydroduct 220	Hydroduct 660	N/A
SOPREMA	SOPRADRAIN 10-G	SOPRADRAIN 15-G	N/A	SOPRADRAIN 18-G	N/A
Hydrotech	N/A	Hydrodrain 400	Hydrodrain 420	Hydrodrain 700	N/A
POWERDRAIN	N/A	POWERDRAIN 6000	N/A	POWERDRAIN 9000	N/A
WR Meadows	Mel Drain 5012	Mel Drain 5035	Mel Drain 5035-B	Mel Drain 7555	N/A
Nilex	Nudrain WD 10	Nudrain WD 15	Nudrain WD 15 WP	Nudrain PD 20	N/A
Sonneborn	DBS 2000	DBS 6000	DBS 6200	DBS 9000	N/A
DMX Drain	DMX Drain 11X	DMX Drain 15X	N/A	DMX Drain 18X	DMX Drain 5X
MARFLEX	GEO-MAT+	G100N	G100N	G100W	N/A
Henry/ Bakor Co.	2000	6000	6200	9000	N/A

Dörken's DELTA®-DRAIN 2000 HI-X, 6000 HI-X, 6200 HI-X, 9000 HI-X are made of high strength and tear proof polypropylene core.

Ask your representative for the "Dare To Compare" test.

Dörken Systems Inc., 4655 Delta Way, Beamsville, Ontario L3J 0T6
1-888-433-5824, (905) 563-3255, Fax: (905) 563-5582
info@dorken.com, dorken.com

A DÖRKENGROUP company

DELTA®-DRAIN 6000 HI-X

For Horizontal and Vertical Drainage Applications

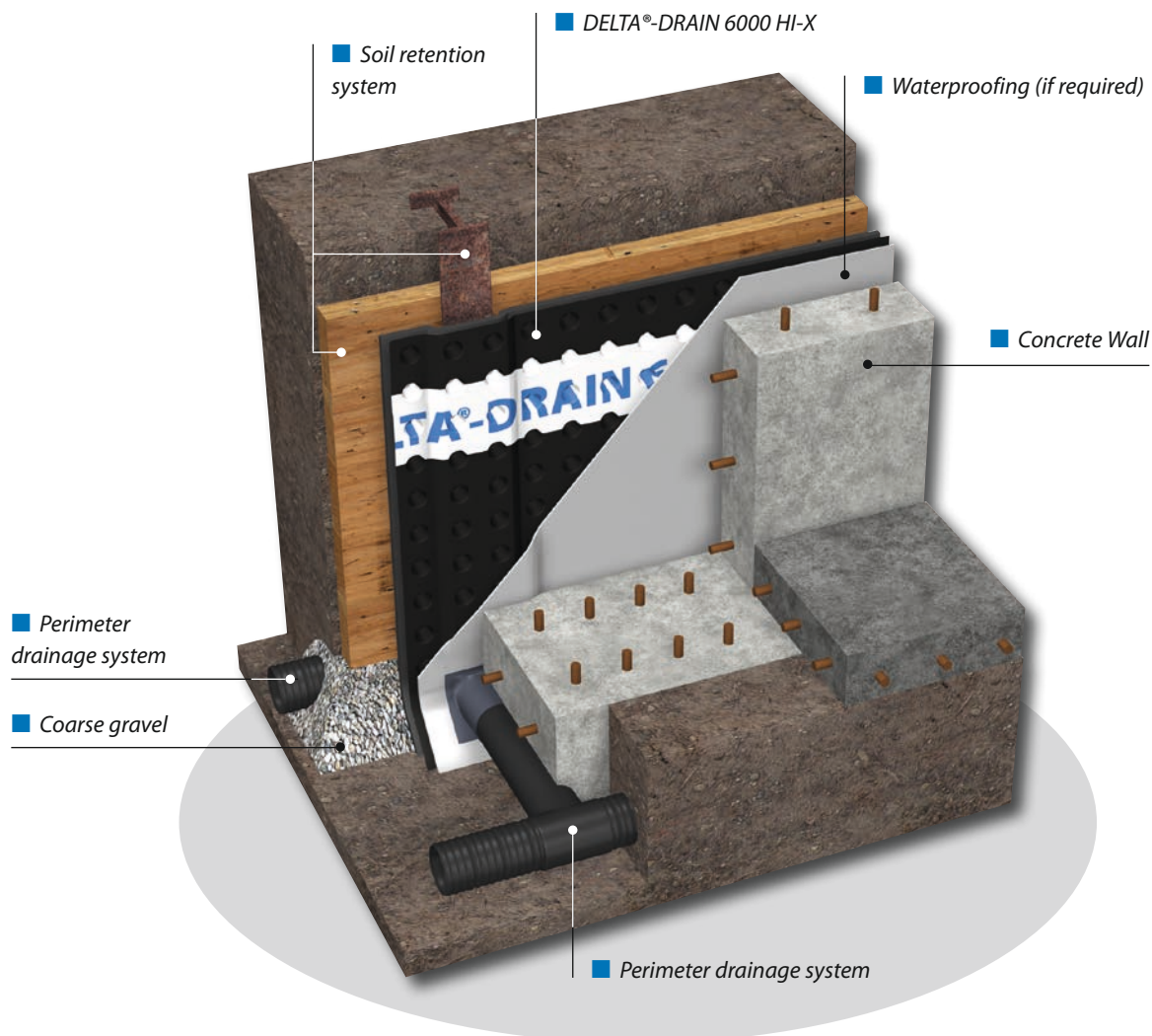
DELTA®-DRAIN 6000 HI-X is a heavy-duty drain board, ideally suited for subsurface drainage applications where high compressive strength and high flow rates are required.

Manufactured from a special copolymer polypropylene, nothing is tougher on the jobsite. DELTA®-DRAIN 6000 HI-X has superior impact resistance, tear resistance and stress cracking resistance when compared to polystyrene look-a-likes. It does not crack,

break or shatter when being installed or handled roughly. When drainage is critical DELTA®-DRAIN 6000 HI-X delivers superior in-ground performance for many years to come.

Outstanding compressive strength and high water flow rate characterize this premium commercial-grade drainboard. Its high-strength core provides a continuous path for water discharge, eliminating the potential for build-up of hydrostatic pressure.

The non-woven geotextile allows water to pass freely into the drainage core. At the same time, it prevents the passage of soil particles to ensure that the drainage core doesn't get clogged. The geotextile meets AASHTO M288 Class 3. The special copolymer polypropylene provides unmatched tear, puncture and chemical resistance, and – unlike polystyrene drainboard imitations – is unaffected by environmental stress cracking.





Hudson Park Pier 27 New York City

Dörken Leading by Technical Competence.

Dörken Systems Inc. delivers innovative, high performance air and moisture barriers for commercial and residential construction, under our DELTA® brand. After 120+ years in over 60 countries, there isn't anything we don't know about building enclosures. We've protected all types of buildings all over the world, in the most extreme conditions. That includes monsoons in India, the deep ice of Norway, and ever-tightening budgets everywhere. We are known for delivering high performance products while providing educational programs and full

technical support. When you need protection you can count on, you can count on Dörken and all of our DELTA® products. No one knows protection like we know protection. A North American manufacturer based in Beamsville, Ontario, Dörken Systems Inc. is a subsidiary of Ewald Dörken AG, leading European developer and manufacturer of waterproofing and drainage products sold worldwide.

For more information, please contact us at 1-888-433-5824 or visit dorken.com.



Environmental Commitment



Our commitment to sustainability and the environment is future oriented, meaning we have a constant and never-ending commitment to improvement. Cosella-Dörken has a combined quality, safety, and environmental management system. We already meet the highest standards of tomorrow. DELTA® protects property. Saves energy. Creates comfort. That is our commitment.

Building green involves the business of manufacturing. Therefore we do not manufacture products or byproducts that can have a negative impact on our world. We protect our environment and the people who are in our employ, while producing high quality, sustainable products that help create healthier living environments.

We develop and manufacture products that:

- **are non-toxic and emit zero volatile organic compounds (VOC)**
- **are produced in North America by fair market wage employees**
- **utilize high quality recycled and remanufactured ingredients**

- **are low transportable cost products**
- **have low impact on environmental resources**
- **are non-polluting**
- **are safe to handle and install**
- **are fully recyclable**
- **are sustainable (> 25 years expected service life)**

Out of respect for nature, environmental protection is strictly observed in all areas of the business. It is our fundamental belief that statutory requirements for the good of the environment should not only be fulfilled, but - wherever possible - should be surpassed.

We process High Density Polyethylene (HDPE) and Polypropylene (PP) to manufacture our DELTA® branded products. The process has virtually zero emissions. We recycle all scrap material from our production, and also purchase selected recycled resins. We utilize a unique technology to ensure sustainable long term quality. We use recyclable and minimal packaging for all our products.

We are active participants in CIPEC (Canadian Industry Program for Energy Conservation) and USGBC (US Green Building Council). Our manufacturing process is clean, allowing us to capture process heat and reuse it for the heating of our facility. We have invested in power factor correction and harmonic distortion filters for improved efficiency in motors. We utilize motion switches, low energy idling devices, and outdoor storage to save energy. We also utilize natural daylight, high efficiency electrical lighting, and water saving fixtures. We use recycled paper and environmentally friendly inks.

Cosella-Dörken manufactures materials that protect a building enclosure from moisture problems. Our products are designed for long term performance. The products perform directly with the physics of fluid flow to provide a service function that works every day and for decades without requiring additional energy for their performance other than the energy in initial manufacture and to apply the materials.

The DELTA® HI-X Difference

DELTA®-DRAIN '000 HI-X High Performance Drainage Systems for civil engineering and commercial construction prove all drain boards are not created equal.

We manufacture from only premium special polypropylene. There are cheaper plastics from which similar-looking drain boards are made. However, we choose polypropylene and we make that choice for a reason: cheaper materials simply don't last. Economy drain-boards are made from polystyrene, the same material out of which coffee cup lids are made. It tears easily and doesn't take much impact. These may be desirable qualities in a coffee cup lid, but much less desirable in a drain board. So looks can be deceiving.

These are the desirable qualities of a drain board:

- **Durability**
- **Impact resistance to survive the construction process**
- **No damage from backfill**
- **Long term resistance to high soil pressures**
- **Long term drainage performance**

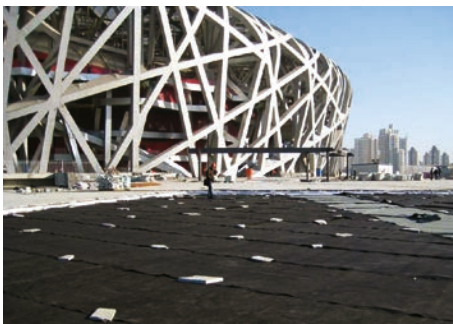
These are the qualities of premium DELTA®-DRAIN '000 HI-X. Drainage is a key part of site water management and it's a job you only want to do once.

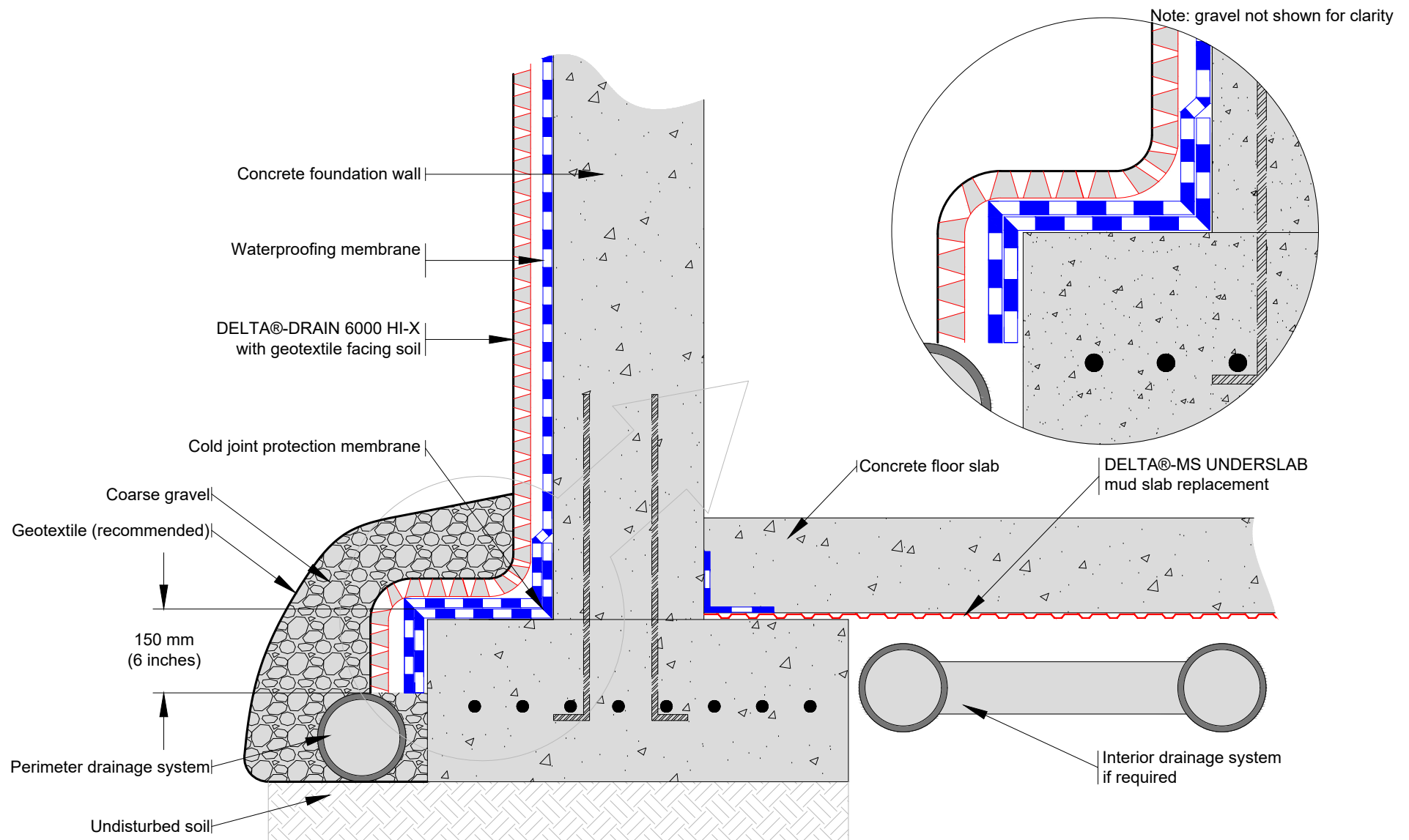
Durable and sustainable, DELTA®-DRAIN '000 HI-X gives long-lasting, reliable, and trust-

worthy protection throughout the life of the structure.

The DELTA®-DRAIN '000 HI-X Series Drain Boards for every application:

- DELTA®-DRAIN 2000 HI-X
- DELTA®-DRAIN 6000 HI-X
- DELTA®-DRAIN 6200 HI-X
- DELTA®-DRAIN 9000 HI-X





SUBSTANTIAL EFFORT HAS BEEN MADE TO ENSURE THAT THE INFORMATION IN THIS DETAIL DRAWING IS ACCURATE. DÖRKEN SYSTEMS INC. CANNOT ACCEPT RESPONSIBILITY FOR ANY ERRORS OR OVERSIGHTS IN THE USE OF THIS MATERIAL OR IN THE PREPARATION OF ARCHITECTURAL OR ENGINEERING PLANS. THE DESIGN PROFESSIONAL MUST RECOGNIZE THAT NO DESIGN DETAIL CAN SUBSTITUTE FOR EXPERIENCED ENGINEERING AND PROFESSIONAL JUDGEMENT.

TITLE:

DELTA®-DRAIN 6000 HI-X WITH FOUNDATION WALL AND FLOOR SLAB AT FOOTING LEVEL

DRAWN BY: Krzysztof Apiasz C. Tech., CPHC®

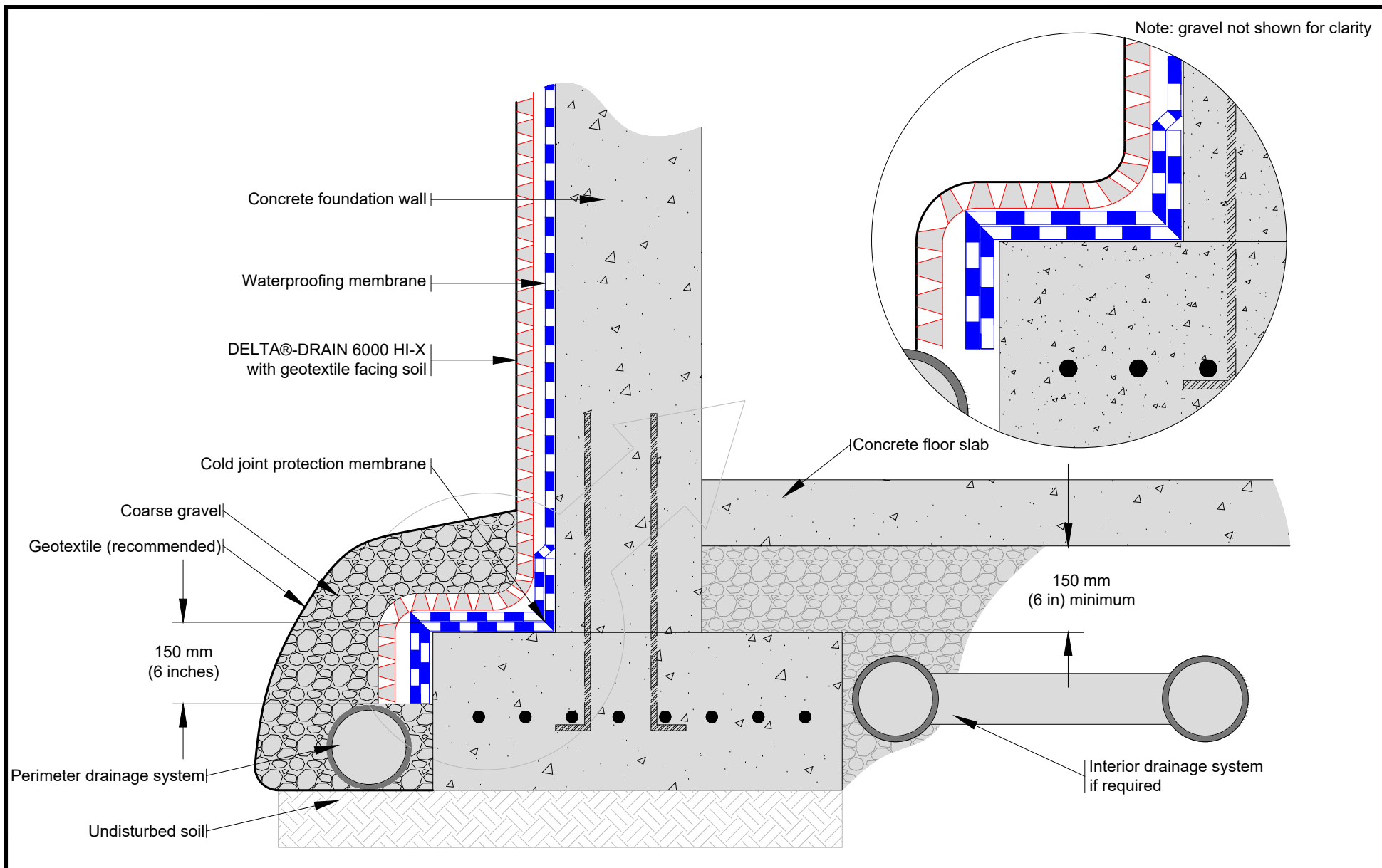
DATE: February 17, 2017
SCALE: NTS

FILE NAME:
DD6000_1

 DÖRKEN

DELTA®

4655 DELTA WAY BEAMSVILLE, ON.
L3J 0T6 CANADA



SUBSTANTIAL EFFORT HAS BEEN MADE TO ENSURE THAT THE INFORMATION IN THIS DETAIL DRAWING IS ACCURATE. DÖRKEN SYSTEMS INC. CANNOT ACCEPT RESPONSIBILITY FOR ANY ERRORS OR OVERSIGHTS IN THE USE OF THIS MATERIAL OR IN THE PREPARATION OF ARCHITECTURAL OR ENGINEERING PLANS. THE DESIGN PROFESSIONAL MUST RECOGNIZE THAT NO DESIGN DETAIL CAN SUBSTITUTE FOR EXPERIENCED ENGINEERING AND PROFESSIONAL JUDGEMENT.

TITLE:

DELTA®-DRAIN 6000 HI-X WITH FOUNDATION WALL AND ELEVATED FLOOR SLAB

DRAWN BY: Krzysztof Apiasz C. Tech., CPHC®

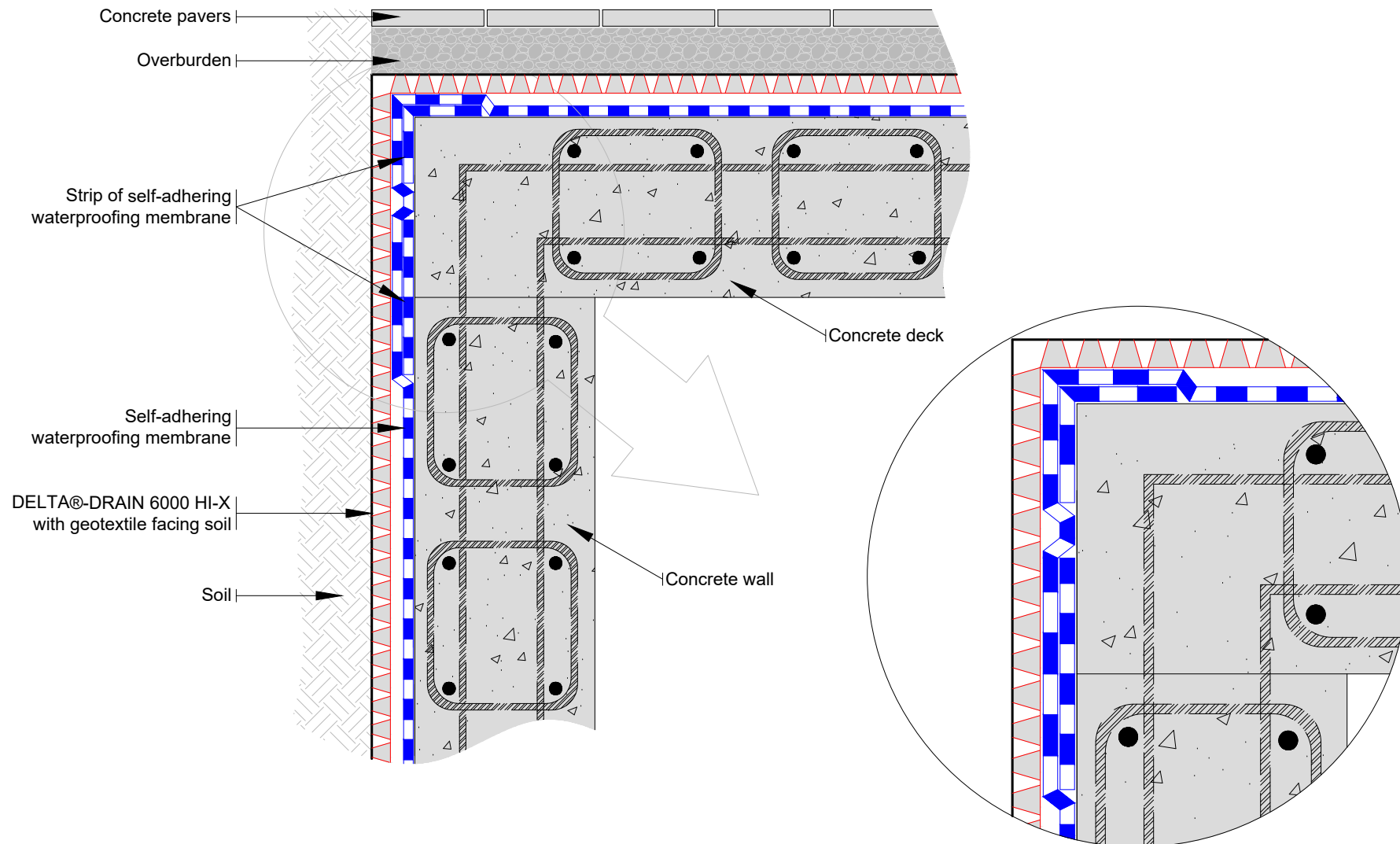
DATE: February 17, 2017
SCALE: NTS

FILE NAME:
DD6000_2

 DÖRKEN

DELTA®

4655 DELTA WAY BEAMSVILLE, ON.
L3J 0T6 CANADA



Note: soil and pavers not shown for clarity

SUBSTANTIAL EFFORT HAS BEEN MADE TO ENSURE THAT THE INFORMATION IN THIS DETAIL DRAWING IS ACCURATE. DÖRKEN SYSTEMS INC. CANNOT ACCEPT RESPONSIBILITY FOR ANY ERRORS OR OVERSIGHTS IN THE USE OF THIS MATERIAL OR IN THE PREPARATION OF ARCHITECTURAL OR ENGINEERING PLANS. THE DESIGN PROFESSIONAL MUST RECOGNIZE THAT NO DESIGN DETAIL CAN SUBSTITUTE FOR EXPERIENCED ENGINEERING AND PROFESSIONAL JUDGEMENT.

TITLE:

DELTA®-DRAIN 6000 HI-X WITH PLAZA DECK TO WALL TIE-IN DETAIL

DRAWN BY: Krzysztof Apiasz C. Tech., CPHC®

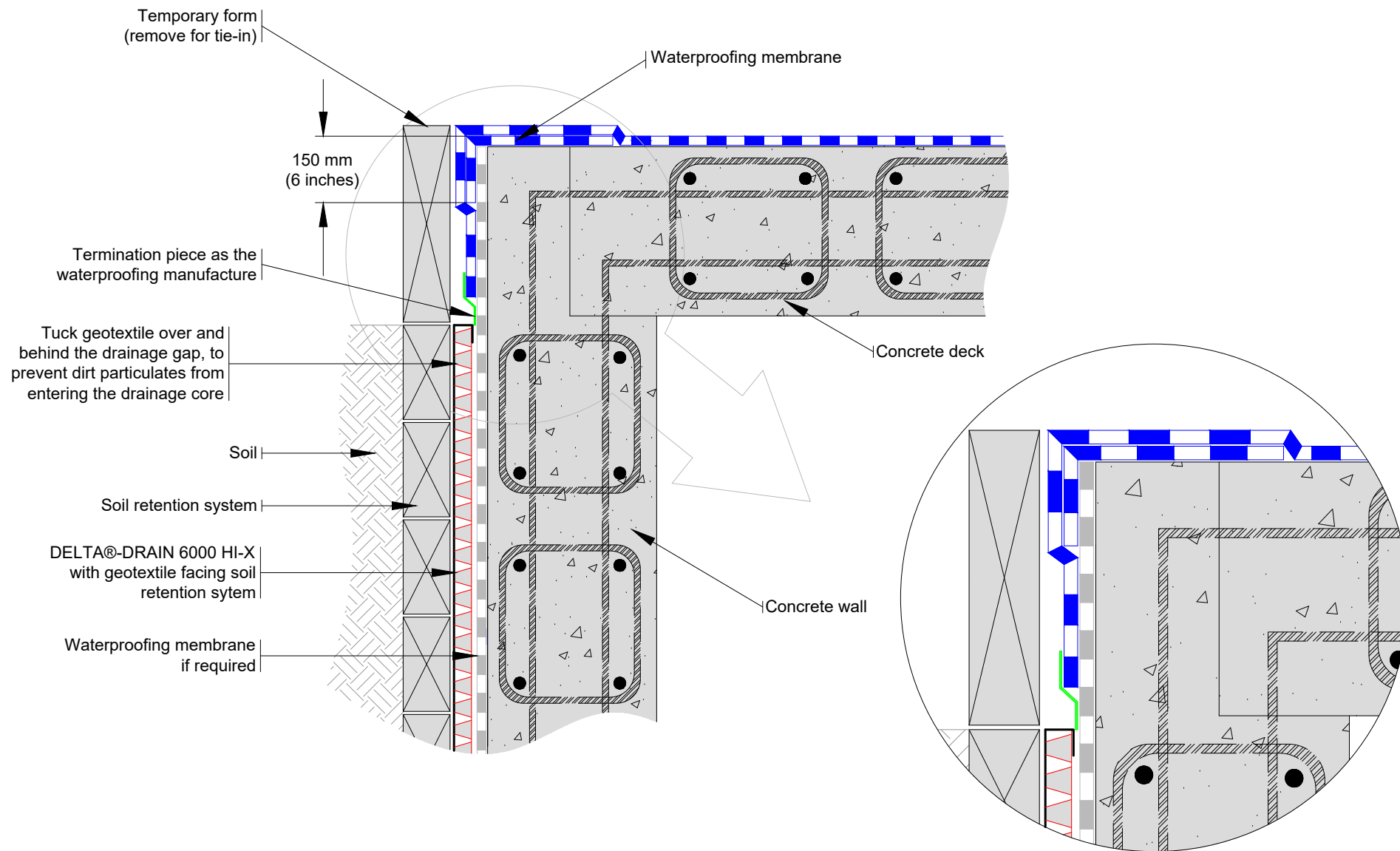
DATE: February 17 , 2017
SCALE: NTS

FILE NAME:
DD6000_4

 **DÖRKEN**

DELTA®

4655 DELTA WAY BEAMSVILLE, ON.
L3J 0T6 CANADA



SUBSTANTIAL EFFORT HAS BEEN MADE TO ENSURE THAT THE INFORMATION IN THIS DETAIL DRAWING IS ACCURATE. DÖRKEN SYSTEMS INC. CANNOT ACCEPT RESPONSIBILITY FOR ANY ERRORS OR OVERSIGHTS IN THE USE OF THIS MATERIAL OR IN THE PREPARATION OF ARCHITECTURAL OR ENGINEERING PLANS. THE DESIGN PROFESSIONAL MUST RECOGNIZE THAT NO DESIGN DETAIL CAN SUBSTITUTE FOR EXPERIENCED ENGINEERING AND PROFESSIONAL JUDGEMENT.

TITLE:

DELTA®-DRAIN 6000 HI-X with PLAZA DECK WATERPROOFING TIE-IN TO VERTICAL BLIND SIDE WATERPROOFING DETAIL

DRAWN BY:
Krzysztof Apłiasz C. Tech., CPHC®

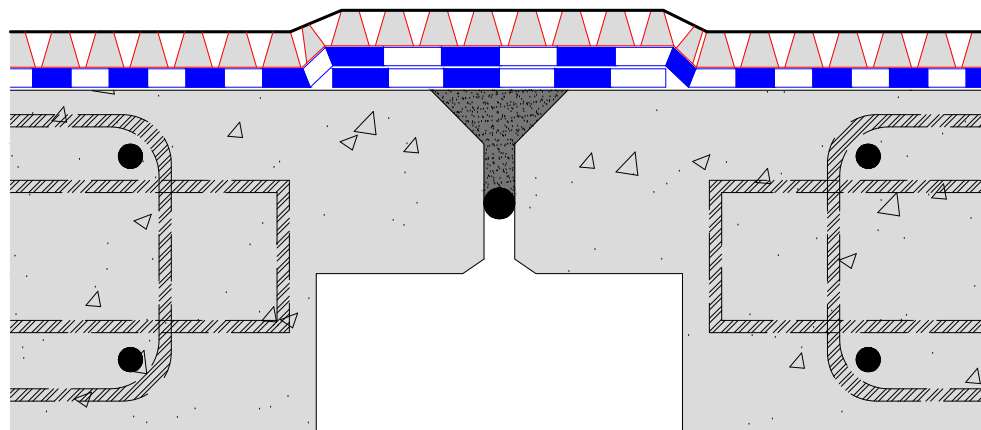
DATE: February 17 , 2017
SCALE: NTS

FILE NAME:
DD6000_5

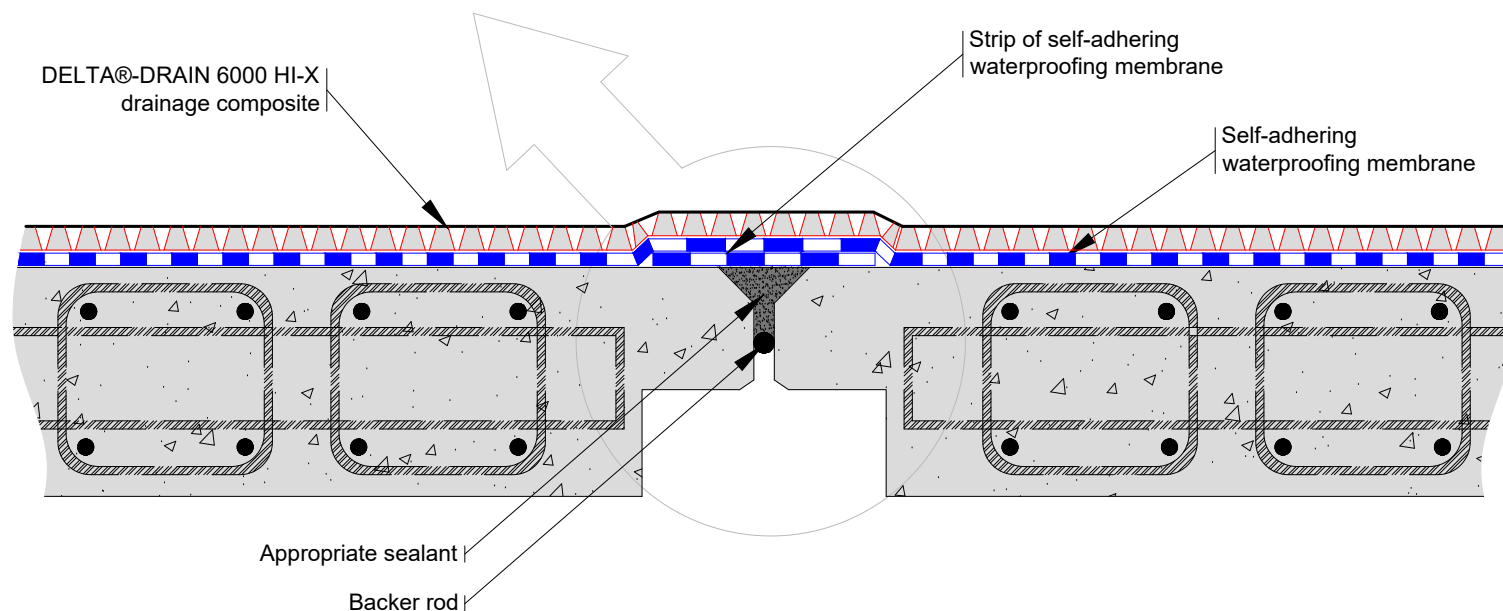
 **DÖRKEN**

DELTA®

4655 DELTA WAY BEAMSVILLE, ON.
L3J 0T6 CANADA



Note: For joint where movement is expected (active joints) see expansion joint cover detail



SUBSTANTIAL EFFORT HAS BEEN MADE TO ENSURE THAT THE INFORMATION IN THIS DETAIL DRAWING IS ACCURATE. DÖRKEN SYSTEMS INC. CANNOT ACCEPT RESPONSIBILITY FOR ANY ERRORS OR OVERSIGHTS IN THE USE OF THIS MATERIAL OR IN THE PREPARATION OF ARCHITECTURAL OR ENGINEERING PLANS. THE DESIGN PROFESSIONAL MUST RECOGNIZE THAT NO DESIGN DETAIL CAN SUBSTITUTE FOR EXPERIENCED ENGINEERING AND PROFESSIONAL JUDGEMENT.

TITLE:

DELTA®-DRAIN 6000 HI-X WITH PASSIVE JOINT COVER DETAIL

DRAWN BY: Krzysztof Apiasz C. Tech., CPHC®

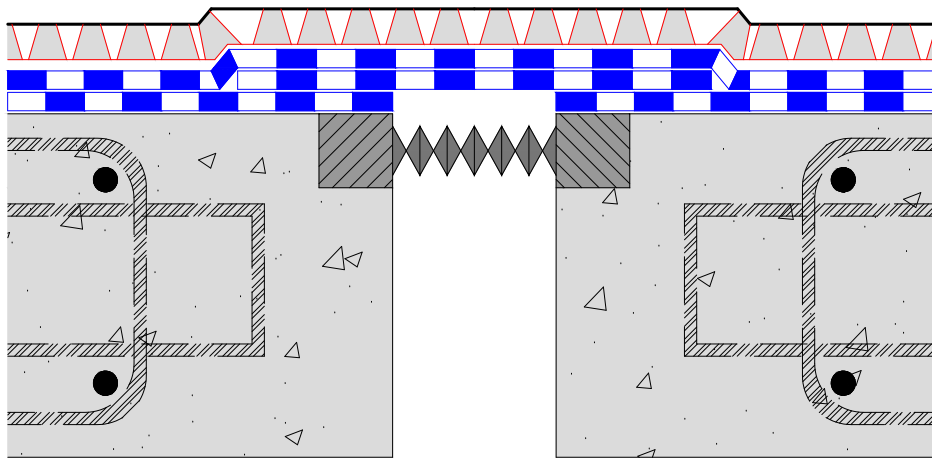
DATE: February 17, 2017
SCALE: NTS

FILE NAME:
DD6000_6

 DÖRKEN

DELTA®

4655 DELTA WAY BEAMSVILLE, ON.
L3J 0T6 CANADA



DELTA®-DRAIN 6000 HI-X
drainage composite

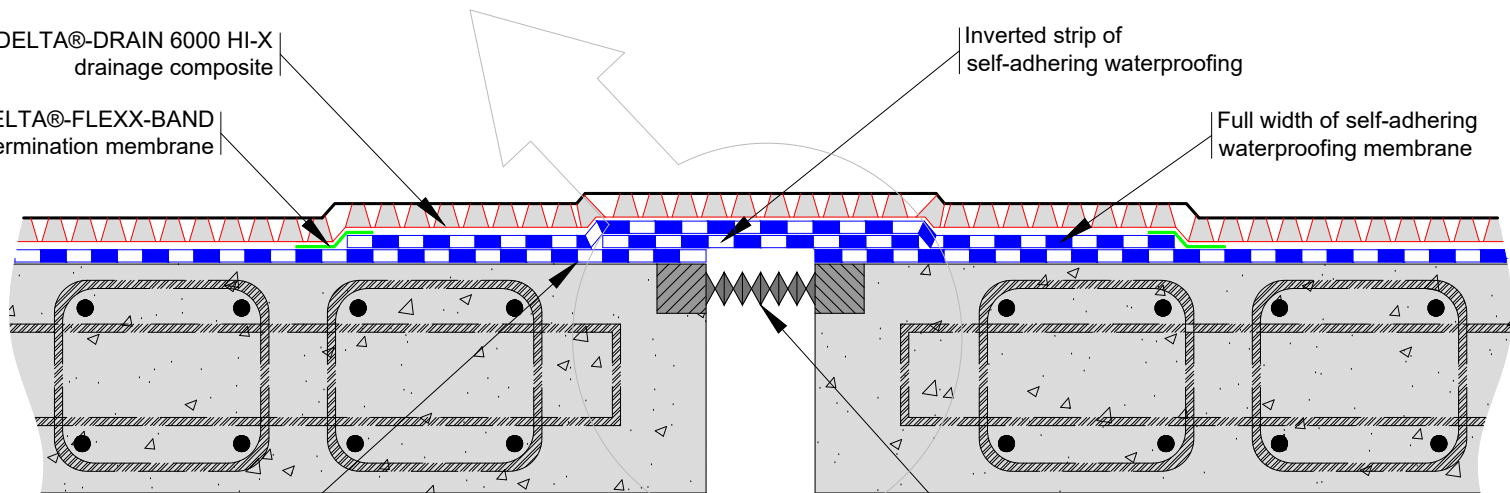
DELTA®-FLEXX-BAND
termination membrane

Inverted strip of
self-adhering waterproofing

Full width of self-adhering
waterproofing membrane

Waterproofing membrane
to edge of expansion joint

Expansion joint system
by others



SUBSTANTIAL EFFORT HAS BEEN MADE TO ENSURE THAT THE INFORMATION IN THIS DETAIL DRAWING IS ACCURATE. DÖRKEN SYSTEMS INC. CANNOT ACCEPT RESPONSIBILITY FOR ANY ERRORS OR OVERSIGHTS IN THE USE OF THIS MATERIAL OR IN THE PREPARATION OF ARCHITECTURAL OR ENGINEERING PLANS. THE DESIGN PROFESSIONAL MUST RECOGNIZE THAT NO DESIGN DETAIL CAN SUBSTITUTE FOR EXPERIENCED ENGINEERING AND PROFESSIONAL JUDGEMENT.

TITLE:

DELTA®-DRAIN 6000 HI-X WITH EXPANSION JOINT COVERDECK DETAIL WITH MOVEMENT LESS THAN 13 mm ($\frac{1}{2}$ INCHES)

DRAWN BY: Krzysztof Apriasz C. Tech., CPHC®

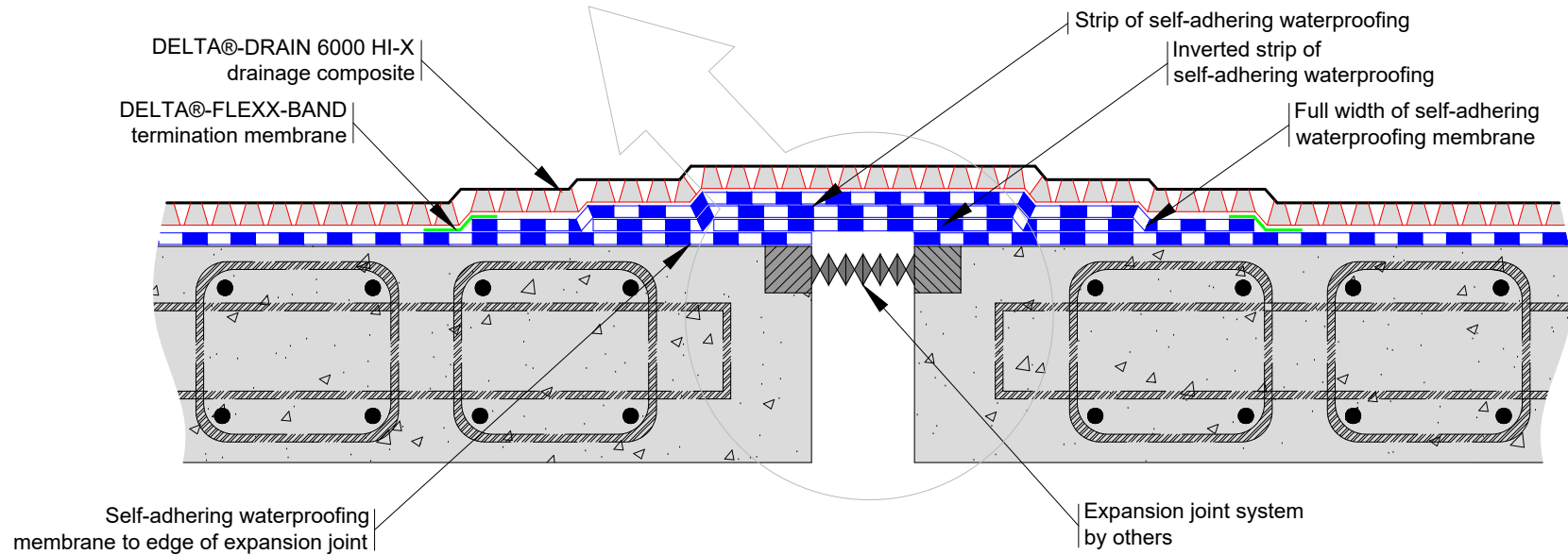
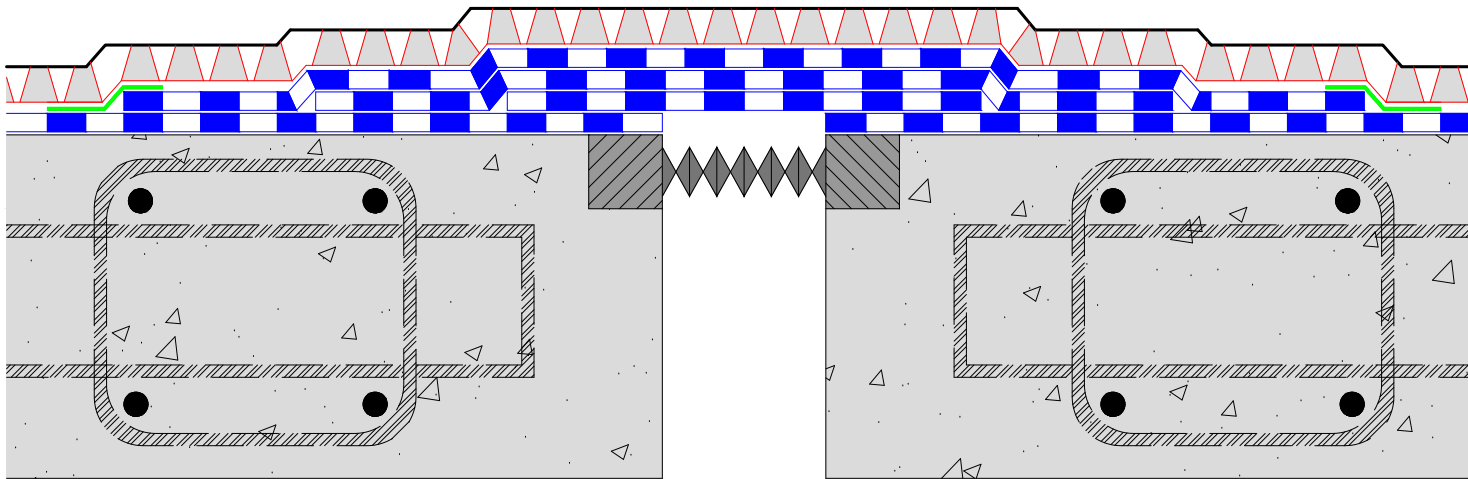
DATE: February 17, 2017
SCALE: NTS

FILE NAME:
DD6000_7

 DÖRKEN

DELTA®

4655 DELTA WAY BEAMSVILLE, ON.
L3J 0T6 CANADA



SUBSTANTIAL EFFORT HAS BEEN MADE TO ENSURE THAT THE INFORMATION IN THIS DETAIL DRAWING IS ACCURATE. DÖRKEN SYSTEMS INC. CANNOT ACCEPT RESPONSIBILITY FOR ANY ERRORS OR OVERSIGHTS IN THE USE OF THIS MATERIAL OR IN THE PREPARATION OF ARCHITECTURAL OR ENGINEERING PLANS. THE DESIGN PROFESSIONAL MUST RECOGNIZE THAT NO DESIGN DETAIL CAN SUBSTITUTE FOR EXPERIENCED ENGINEERING AND PROFESSIONAL JUDGEMENT.

TITLE:

DELTA®-DRAIN 6000 HI-X WITH EXPANSION JOINT COVER DECK DETAIL WITH MOVEMENT MORE THAN 13 mm ($\frac{1}{2}$ INCHES)

DRAWN BY: Krzysztof Apiasz C. Tech., CPHC®

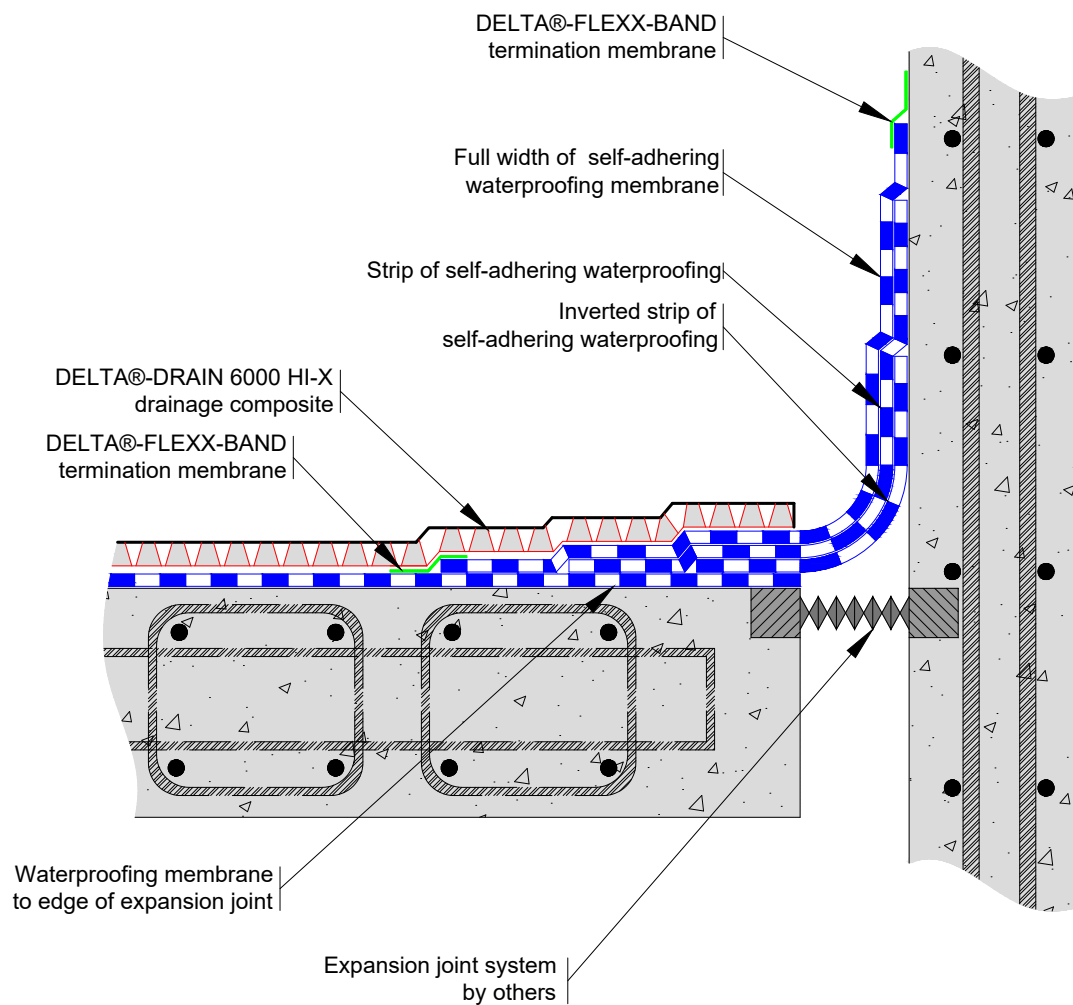
DATE: February 17, 2017
SCALE: NTS

FILE NAME:
DD6000_8

 DÖRKEN

DELTA®

4655 DELTA WAY BEAMSVILLE, ON.
L3J 0T6 CANADA



SUBSTANTIAL EFFORT HAS BEEN MADE TO ENSURE THAT THE INFORMATION IN THIS DETAIL DRAWING IS ACCURATE. DÖRKEN SYSTEMS INC. CANNOT ACCEPT RESPONSIBILITY FOR ANY ERRORS OR OVERSIGHTS IN THE USE OF THIS MATERIAL OR IN THE PREPARATION OF ARCHITECTURAL OR ENGINEERING PLANS. THE DESIGN PROFESSIONAL MUST RECOGNIZE THAT NO DESIGN DETAIL CAN SUBSTITUTE FOR EXPERIENCED ENGINEERING AND PROFESSIONAL JUDGEMENT.

TITLE:

**DELTA®-DRAIN 6000 HI-X EXPANSION
JOINT COVER DECK TO WALL JUNCTION
DETAIL**

DRAWN BY: Krzysztof Apiasz C. Tech., CPHC®

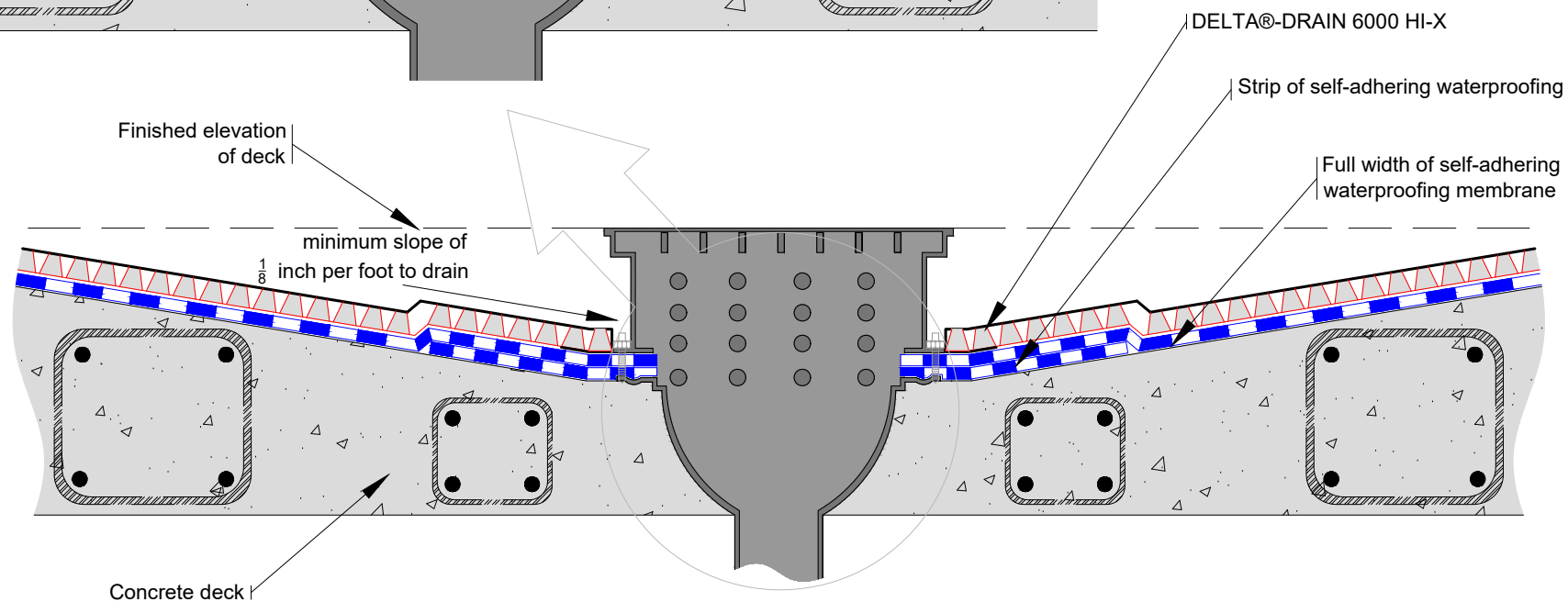
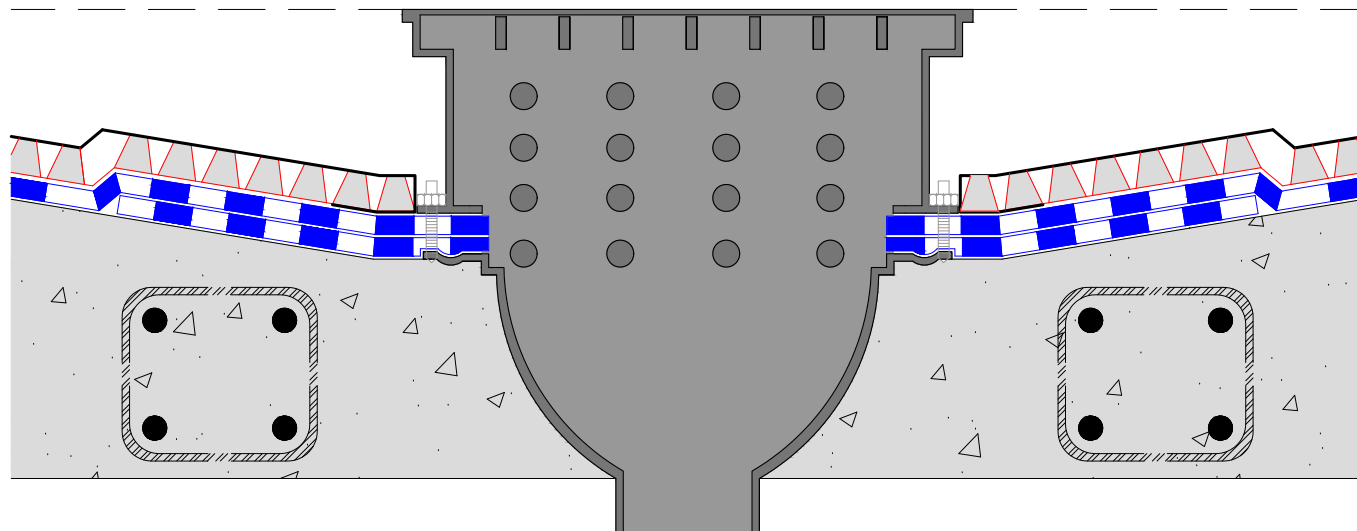
Date: February 18, 2011

File Name: DD6000_09

DÖRKEN

DELTA®

4655 DELTA WAY BEAMSVILLE, ON.
L3J 0T6 CANADA



SUBSTANTIAL EFFORT HAS BEEN MADE TO ENSURE THAT THE INFORMATION IN THIS DETAIL DRAWING IS ACCURATE. DÖRKEN SYSTEMS INC. CANNOT ACCEPT RESPONSIBILITY FOR ANY ERRORS OR OVERSIGHTS IN THE USE OF THIS MATERIAL OR IN THE PREPARATION OF ARCHITECTURAL OR ENGINEERING PLANS. THE DESIGN PROFESSIONAL MUST RECOGNIZE THAT NO DESIGN DETAIL CAN SUBSTITUTE FOR EXPERIENCED ENGINEERING AND PROFESSIONAL JUDGEMENT.

TITLE:

DELTA®-DRAIN 6000 HI-X WITH TYPICAL DRAIN DETAIL

DRAWN BY: Krzysztof Apriasz C. Tech., CPHC®

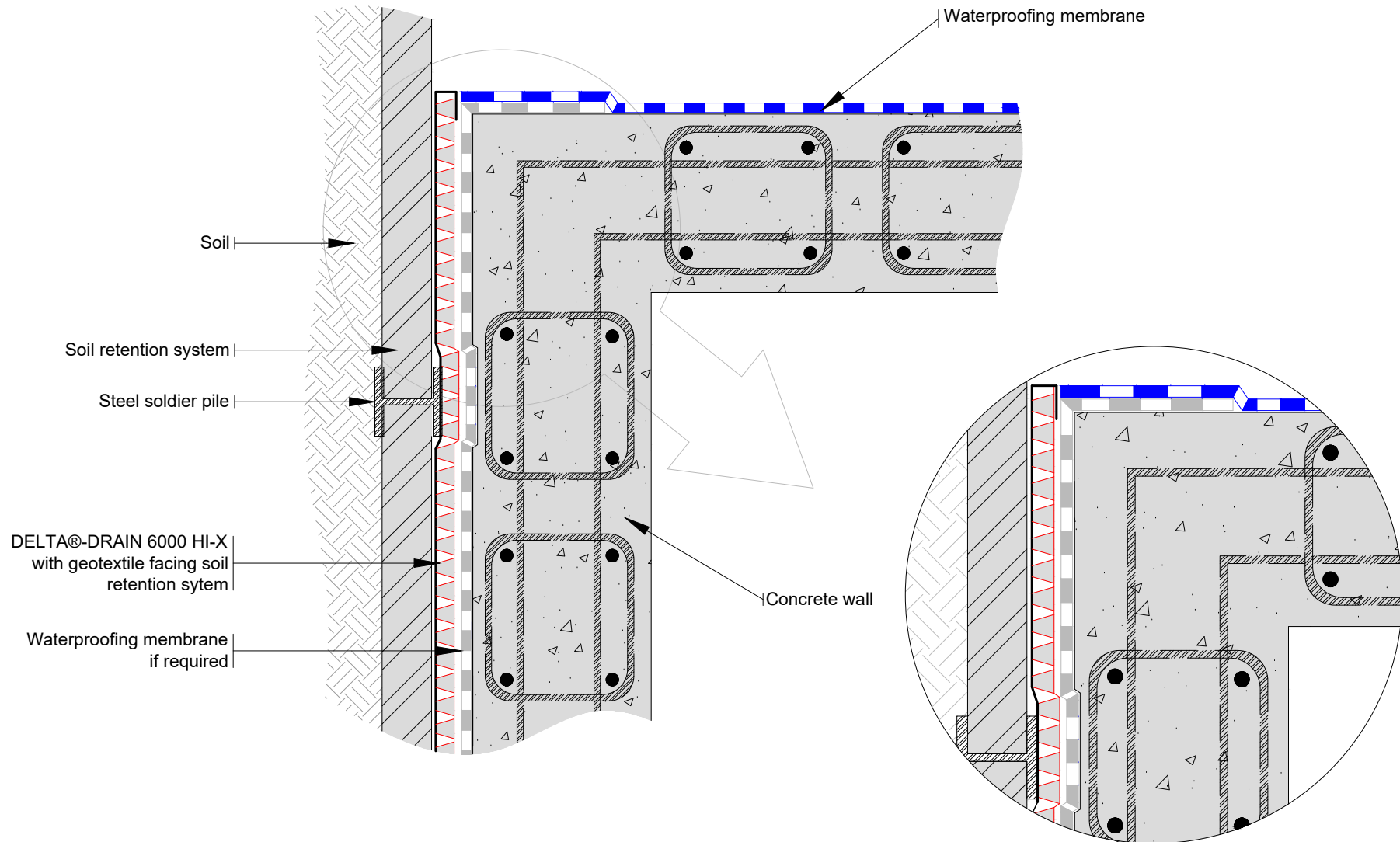
DATE: February 17, 2017
SCALE: NTS

FILE NAME:
DD6000_10

 **DÖRKEN**

DELTA®

4655 DELTA WAY BEAMSVILLE, ON.
L3J 0T6 CANADA



SUBSTANTIAL EFFORT HAS BEEN MADE TO ENSURE THAT THE INFORMATION IN THIS DETAIL DRAWING IS ACCURATE. DÖRKEN SYSTEMS INC. CANNOT ACCEPT RESPONSIBILITY FOR ANY ERRORS OR OVERSIGHTS IN THE USE OF THIS MATERIAL OR IN THE PREPARATION OF ARCHITECTURAL OR ENGINEERING PLANS. THE DESIGN PROFESSIONAL MUST RECOGNIZE THAT NO DESIGN DETAIL CAN SUBSTITUTE FOR EXPERIENCED ENGINEERING AND PROFESSIONAL JUDGEMENT.

TITLE:

DELTA®-DRAIN 6000 HI-X TIE-IN TO SELF-ADHERING WATERPROOFING MEMBRANE DETAIL

DRAWN BY: Krzysztof Apriasz C. Tech., CPHC®

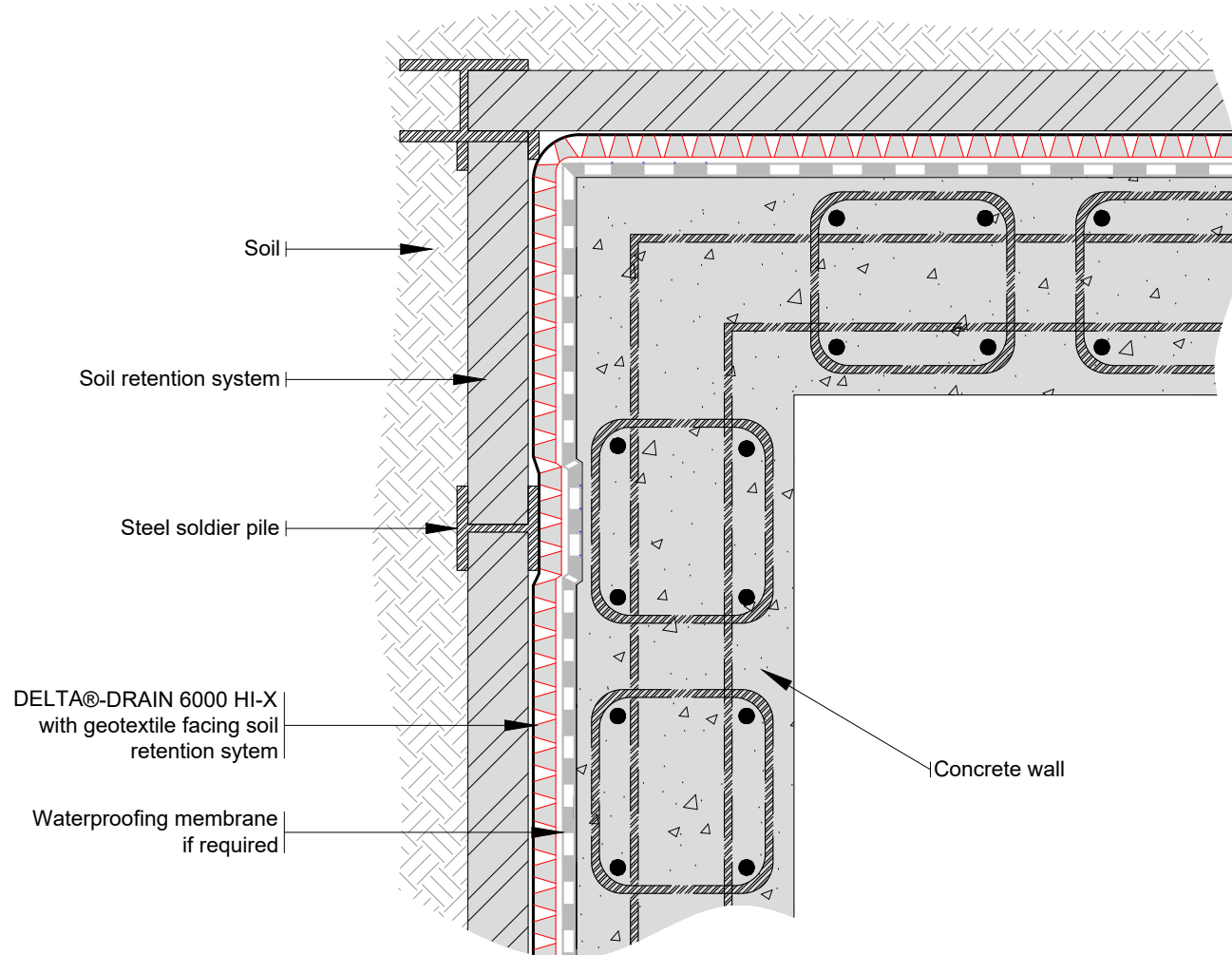
DATE: February 17, 2017
SCALE: NTS

FILE NAME:
DD6000_12

 **DÖRKEN**

DELTA®

4655 DELTA WAY BEAMSVILLE, ON.
L3J 0T6 CANADA



SUBSTANTIAL EFFORT HAS BEEN MADE TO ENSURE THAT THE INFORMATION IN THIS DETAIL DRAWING IS ACCURATE. DÖRKEN SYSTEMS INC. CANNOT ACCEPT RESPONSIBILITY FOR ANY ERRORS OR OVERSIGHTS IN THE USE OF THIS MATERIAL OR IN THE PREPARATION OF ARCHITECTURAL OR ENGINEERING PLANS. THE DESIGN PROFESSIONAL MUST RECOGNIZE THAT NO DESIGN DETAIL CAN SUBSTITUTE FOR EXPERIENCED ENGINEERING AND PROFESSIONAL JUDGEMENT.

TITLE:

TYPICAL CORNER DETAIL DELTA®-DRAIN 6000 HI-X

DRAWN BY: Krzysztof Apiasz C. Tech., CPHC®

DATE: February 17, 2017
SCALE: NTS

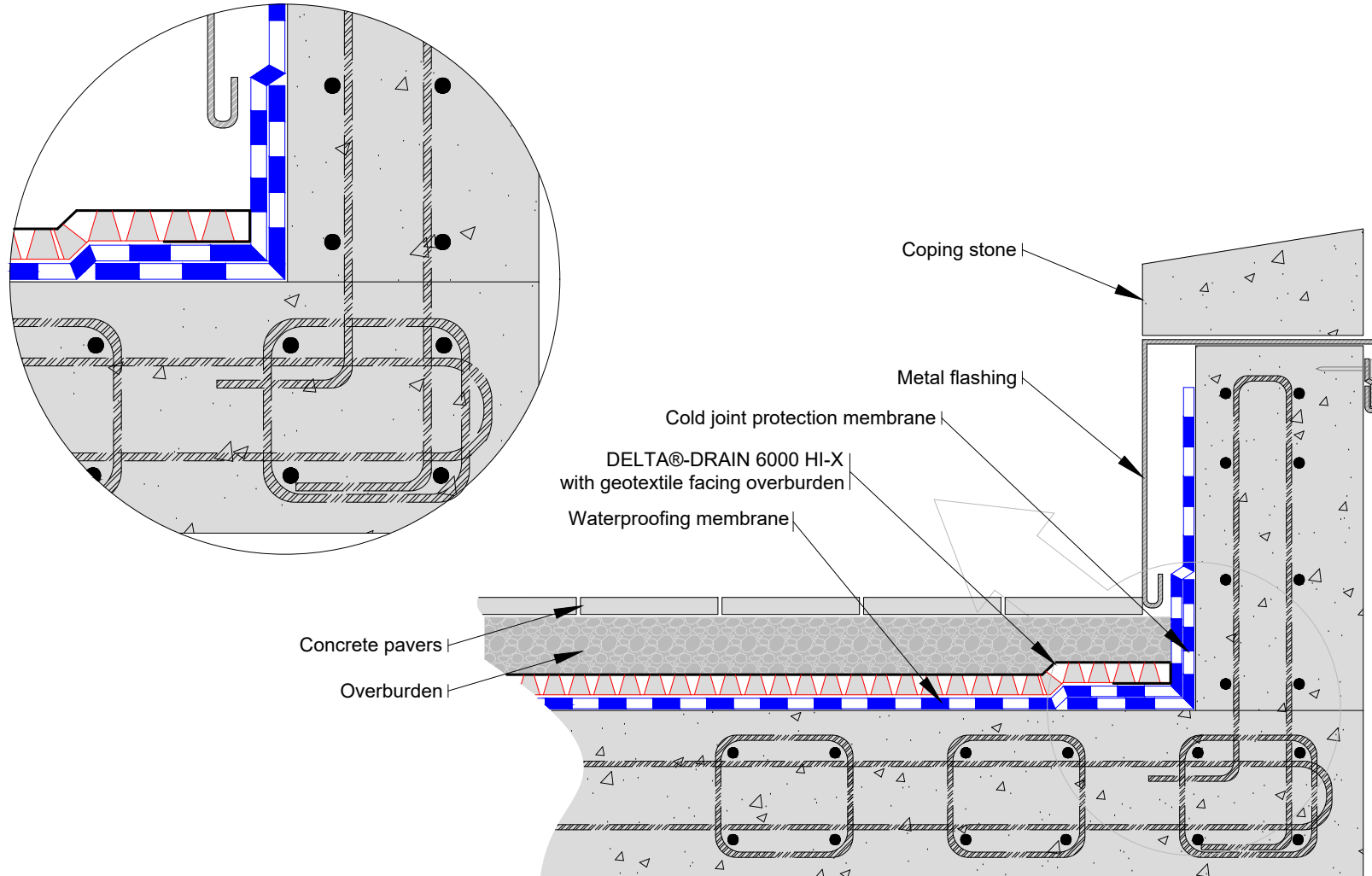
FILE NAME:
DD6000_13

 **DÖRKEN**

DELTA®

4655 DELTA WAY BEAMSVILLE, ON.
L3J 0T6 CANADA

Note: overburden not shown for clarity



SUBSTANTIAL EFFORT HAS BEEN MADE TO ENSURE THAT THE INFORMATION IN THIS DETAIL DRAWING IS ACCURATE. DÖRKEN SYSTEMS INC. CANNOT ACCEPT RESPONSIBILITY FOR ANY ERRORS OR OVERSIGHTS IN THE USE OF THIS MATERIAL OR IN THE PREPARATION OF ARCHITECTURAL OR ENGINEERING PLANS. THE DESIGN PROFESSIONAL MUST RECOGNIZE THAT NO DESIGN DETAIL CAN SUBSTITUTE FOR EXPERIENCED ENGINEERING AND PROFESSIONAL JUDGEMENT.

TITLE:

TYPICAL PARAPET DETAIL WITH DELTA®-DRAIN 6000 HI-X

DRAWN BY: Krzysztof Apriasz C. Tech., CPHC®

DATE: February 17 , 2017
SCALE: NTS

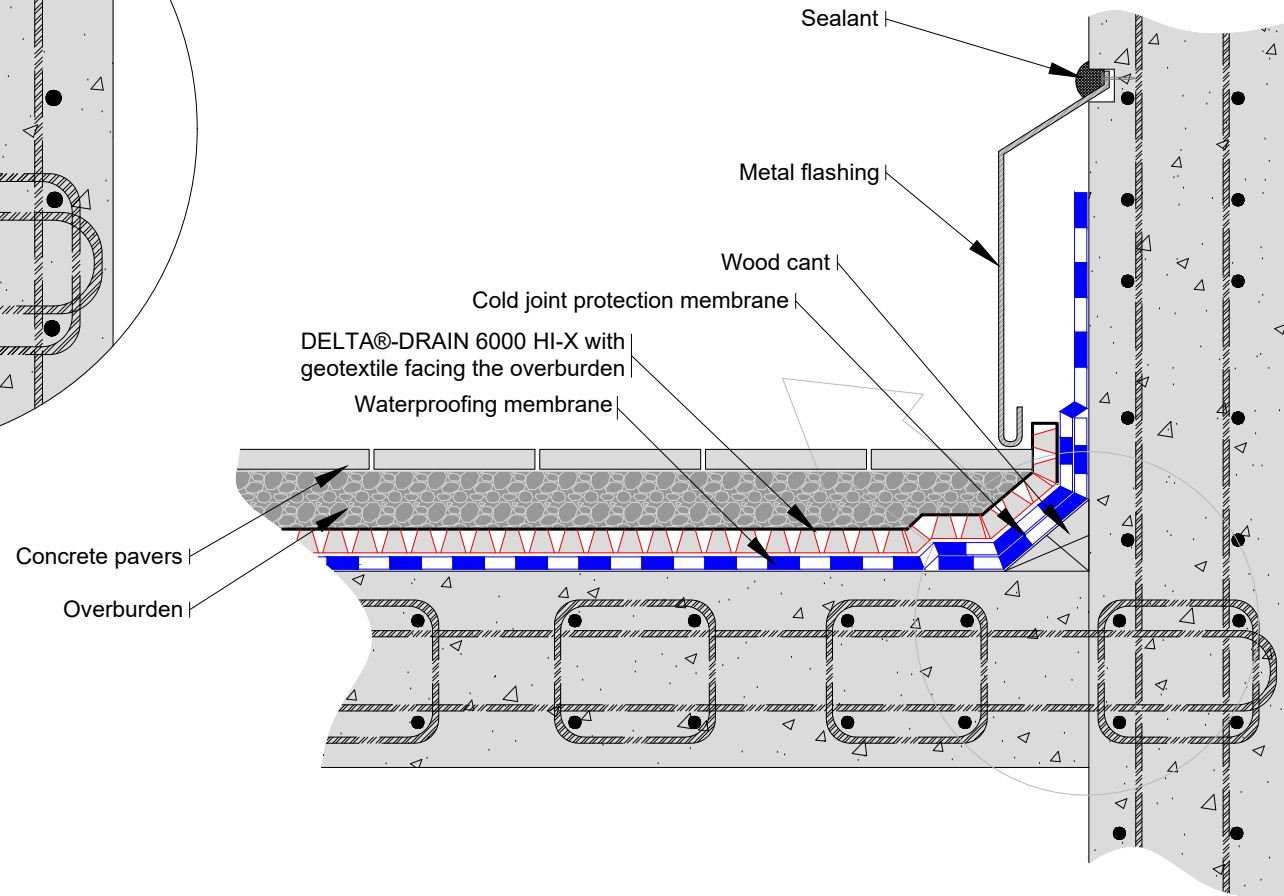
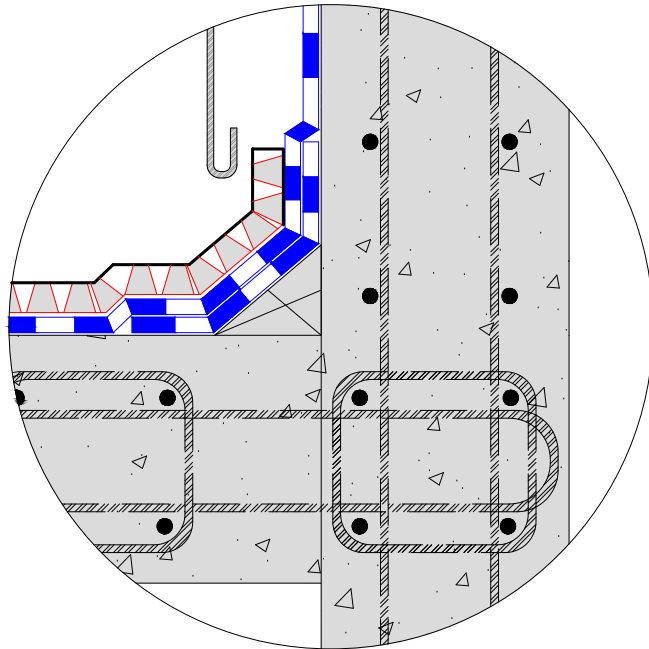
FILE NAME:
DD6000_14

 DÖRKEN

DELTA®

4655 DELTA WAY BEAMSVILLE, ON.
L3J 0T6 CANADA

Note: overburden not shown for clarity



SUBSTANTIAL EFFORT HAS BEEN MADE TO ENSURE THAT THE INFORMATION IN THIS DETAIL DRAWING IS ACCURATE. DÖRKEN SYSTEMS INC. CANNOT ACCEPT RESPONSIBILITY FOR ANY ERRORS OR OVERSIGHTS IN THE USE OF THIS MATERIAL OR IN THE PREPARATION OF ARCHITECTURAL OR ENGINEERING PLANS. THE DESIGN PROFESSIONAL MUST RECOGNIZE THAT NO DESIGN DETAIL CAN SUBSTITUTE FOR EXPERIENCED ENGINEERING AND PROFESSIONAL JUDGEMENT.

TITLE:

TYPICAL ROOF EDGE TERMINATION DETAIL WITH DELTA®-DRAIN 6000 HI-X

DRAWN BY: Krzysztof Apriasz C. Tech., CPHC®

DATE: February 17, 2017
SCALE: NTS

FILE NAME:
DD6000_15

 DÖRKEN

DELTA®

4655 DELTA WAY BEAMSVILLE, ON.
L3J 0T6 CANADA