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Product Guide Specification

Specifier Notes: This product guide specification is written in Construction Specifications Institute (CSI) 3-Part Format in accordance with *The CSI Construction Specifications Practice Guide, MasterFormat, SectionFormat, and PageFormat*.

This Section must be carefully reviewed and edited by the Architect to meet the requirements of the project and local building code. Coordinate this Section with Division 01, other specification sections, and the Drawings. Delete all Specifier Notes after editing this Section.

Section numbers and titles are based on *MasterFormat 2016 Edition*.

SECTION 33 42 36

STORMWATER TRENCH DRAINS

Specifier Notes: This Section covers NDS, Inc. "FILCOTEN tec" and "FILCOTEN pro" drainage channel systems. Consult NDS, Inc. for assistance in editing this Section for the specific application.

Use of "FILCOTEN" drainage channel system may contribute to LEED credits. Consult NDS, Inc. for more information.

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Drainage channel system.

1.2 RELATED REQUIREMENTS

Specifier Notes: Edit the following list of related sections as necessary. Limit the list to sections with specific information that the reader might expect to find in this Section, but is specified elsewhere.

- A. Section 03 30 00 – Cast-in-Place Concrete.
- B. Section 31 23 00 – Excavation and Fill.
- C. Section 33 41 00 – Storm Utility Drainage Piping.

1.3 REFERENCE STANDARDS

Specifier Notes: List reference standards used elsewhere in this Section, complete with designations and titles. Delete reference standards from the following list not used in the edited Section.

- A. The European Committee for Standardization (CEN):
 - 1. EN 1433 – Drainage channels for vehicular and pedestrian areas. Classification, design and testing requirements, marking and evaluation of conformity.

1.4 PREINSTALLATION MEETINGS

Specifier Notes: Edit preinstallation meetings as necessary. Delete if not required.

- A. Convene preinstallation meeting [1 week] [2 weeks] before start of Work of this Section.
- B. Require attendance of parties directly affecting Work of this Section, including Contractor, Architect, installer, and manufacturer's representative.
- C. Review the Following:
 - 1. Materials.
 - 2. Installation.
 - 3. Adjusting.
 - 4. Cleaning.
 - 5. Protection.
 - 6. Coordination with other Work.

1.5 SUBMITTALS

Specifier Notes: Edit submittal requirements as necessary. Delete submittals not required.

- A. Comply with Division 01.
- B. Product Data: Submit manufacturer's product data, including installation instructions.
- C. Shop Drawings: Submit manufacturer's shop drawings, indicating layout, dimensions, materials, components, and accessories.

- D. Samples: Submit manufacturer's sample of trench drain, including grate.
- E. Manufacturer's Certification: Submit manufacturer's certification that materials comply with specified requirements and are suitable for intended application.
- F. Manufacturer's Project References: Submit manufacturer's list of successfully completed drainage channel system projects, including project name and location, name of architect, and type and quantity of drainage channel systems furnished.
- G. Installer's Project References: Submit installer's list of successfully completed drainage channel system projects, including project name and location, name of architect, and type and quantity of drainage channel systems installed.
- H. Warranty Documentation: Submit manufacturer's standard warranty.

1.6 QUALITY ASSURANCE

- A. Manufacturer's Qualifications: Manufacturer regularly engaged, for a minimum of 10 years, in the manufacturing of drainage channel systems of similar type to that specified.
- B. Installer's Qualifications:
 - 1. Installer regularly engaged, for a minimum of 5 years, in installation of drainage channel systems of similar type to that specified.
 - 2. Employ persons trained for installation of drainage channel systems.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Delivery Requirements: Deliver materials to site in manufacturer's original, unopened containers and packaging, with labels clearly identifying product name and manufacturer.
- B. Storage and Handling Requirements:
 - 1. Store and handle materials in accordance with manufacturer's instructions.
 - 2. Keep materials in manufacturer's original, unopened containers and packaging until installation.
 - 3. Store materials in clean areas, protected from exposure to harmful weather conditions.
 - 4. Store materials out of direct sunlight.
 - 5. Protect materials during storage, handling, and installation to prevent damage.

1.8 AMBIENT CONDITIONS

- A. During Cold Weather:
 - 1. Do not use frozen materials.
 - 2. Do not use materials mixed or coated with ice or frost.
 - 3. Do not build on frozen Work.
- B. During Wet Weather: Do not build on wet, saturated, or muddy subgrade.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturer: NDS, Inc., 851 North Harvard Avenue, Lindsay, California 93247. Toll Free 800-726-1994. Phone 559-562-9888. Toll Free Fax 800-726-1998. Fax 559-562-4488. Website www.ndspro.com. Email nds@ndspro.com.

Specifier Notes: Specify if substitutions will be permitted.

- B. Substitutions: [Not permitted] [Comply with Division 01].
- C. Single Source: Provide materials from single manufacturer.

2.2 DRAINAGE CHANNEL SYSTEM

Specifier Notes: Specify drainage channel system required for the Project. Delete drainage channel systems not required.

- A. Drainage Channel System: "FILCOTEN tec 100".

Specifier Notes: Specify galvanized steel or stainless steel edges.

1. Precast concrete drainage channels with concreted [galvanized steel edges] [stainless steel edges].
2. Channel Body Material: Fiber-reinforced concrete composite.
 - a. Fiber Content: Minimum 0.4 percent by volume.
3. Load Class: A15kN to E600kN.
4. Tested: EN 1433.
5. Certified: CE.
6. Length per Section: 1,000 mm.
7. Width:
 - a. Overall: 130 mm.
 - b. Nominal: 100 mm.
8. Overall Height: 135 to 185 mm.
9. Wall Thickness: 15 mm.
10. Weight per Section without Grating: 13.0 to 18.7 kg.

Specifier Notes: Specify without or with internal slope.

11. Internal Slope: [Without slope] [0.5 percent].

Specifier Notes: Specify with or without bottom outlet.

12. Bottom Outlet: [With] [Without].
13. Cross Bars: None in channel cross section.
14. Sealant Joints: Male side of channel body.
15. Integrated Anchoring Ribs: For mechanical fixing in concrete casing.

16. Surface:
 - a. Exterior: Rough for good adhesion to concrete casing.
 - b. Interior: Smooth for maximum discharge rate.
17. Mineral-Based Material: 100 percent.
18. Recyclable: 100 percent.
19. Accessories:

Specifier Notes: Specify required accessories. Delete accessories not required.

- a. Sump:
 - 1) Material: Precast fiber-reinforced composite concrete with concreted galvanized steel edge matching channels.

Specifier Notes: Silt bucket and odor trap are optional. Delete if not required.

- 2) Silt Bucket: Plastic.
- 3) Odor Trap: Plastic.
- b. Front and End Plates: DN100 galvanized steel, [with] [without] outlet.
- c. No Hub Bottom Outlets: DN100 galvanized steel.
- d. Rebar Supports: Galvanized steel.
- e. Anti-vandalism Locking Device: Stainless steel.
- f. Odor Trap for Bottom Outlet: DN100 plastic.

B. Drainage Channel System: "FILCOTEN pro 100".

Specifier Notes: Specify galvanized steel, stainless steel, or cast iron edges.

1. Precast concrete drainage channels with concreted [galvanized steel] [stainless steel] [cast iron] edges.
2. Channel Body Material: Fiber-reinforced concrete composite.
 - a. Fiber Content: Minimum 0.4 percent by volume.
3. Load Class: A15kN to E600kN.
4. Tested: EN 1433.
5. Certified: CE.
6. Length per Section: 1,000 mm.
7. Width:
 - a. Overall: 138 mm.
 - b. Nominal: 100 mm.
8. Overall Height: 142 to 245 mm.
9. Wall Thickness: 19 mm.
10. Weight per Section without Grating:

Specifier Notes: Include weight per section without grating for specified edges.

- a. Galvanized Steel Edges: 18.3 to 29.9 kg.
- b. Stainless Steel Edges: 18.3 to 29.9 kg.
- c. Cast Iron Edges: 19.1 to 31.2 kg.

Specifier Notes: Specify without or with internal slope.

11. Internal Slope: [Without slope] [0.5 percent].

Specifier Notes: Specify with or without bottom outlet.

12. Bottom Outlet: [With] [Without].
13. Cross Bars: None in channel cross section.
14. Sealant Joints: Male side of channel body.
15. Integrated Anchoring Ribs: For mechanical fixing in concrete casing.
16. Surface:
 - a. Exterior: Rough for good adhesion to concrete casing.
 - b. Interior: Smooth for maximum discharge rate.
17. Mineral-Based Material: 100 percent.
18. Recyclable: 100 percent.
19. Accessories:

Specifier Notes: Specify required accessories. Delete accessories not required.

- a. Sump:
 - 1) Material: Precast fiber-reinforced composite concrete with concreted edge matching channels.

Specifier Notes: Silt bucket and odor trap are optional. Delete if not required.

- 2) Silt Bucket: Plastic.
 - 3) Odor Trap: Plastic.
- b. Front and End Plates: DN100 [galvanized steel] [stainless steel], [with] [without] outlet.
- c. No Hub Bottom Outlets: DN100 galvanized steel.
- d. Rebar Supports: Galvanized steel.
- e. Step Connector Plates: Galvanized steel.
- f. Anti-vandalism Locking Device: Stainless steel.

- C. Drainage Channel System: "FILCOTEN pro 150".

Specifier Notes: Specify galvanized steel, stainless steel, or cast iron edges.

1. Precast concrete drainage channels with concreted [galvanized steel] [stainless steel] [cast iron] edges.
2. Channel Body Material: Fiber-reinforced concrete composite.
 - a. Fiber Content: Minimum 0.4 percent by volume.
3. Load Class: A15kN to E600kN.
4. Tested: EN 1433.
5. Certified: CE.
6. Length per Section: 1,000 mm.

7. Width:
 - a. Overall: 188 mm.
 - b. Nominal: 150 mm.
8. Overall Height: 210 to 310 mm.
9. Wall Thickness: 19 mm.
10. Weight per Section without Grating:

Specifier Notes: Include weight per section without grating for specified edges.

- a. Galvanized Steel Edges: 30.8 to 46.9 kg.
- b. Stainless Steel Edges: 30.8 to 46.9 kg.
- c. Cast Iron Edges: 31.6 to 47.8 kg.

Specifier Notes: Specify without or with internal slope.

11. Internal Slope: [Without slope] [0.5 percent].

Specifier Notes: Specify with or without bottom outlet.

12. Bottom Outlet: [With] [Without].
13. Cross Bars: None in channel cross section.
14. Sealant Joints: Male side of channel body.
15. Integrated Anchoring Ribs: For mechanical fixing in concrete casing.
16. Surface:
 - a. Exterior: Rough for good adhesion to concrete casing.
 - b. Interior: Smooth for maximum discharge rate.
17. Mineral-Based Material: 100 percent.
18. Recyclable: 100 percent.
19. Accessories:

Specifier Notes: Specify required accessories. Delete accessories not required.

- a. Sump:
 - 1) Material: Precast fiber-reinforced composite concrete with concreted edge matching channels.

Specifier Notes: Silt bucket and odor trap are optional. Delete if not required.

- 2) Silt Bucket: Plastic.
 - 3) Odor Trap: Plastic.
- b. Front and End Plates: DN150 [galvanized steel] [stainless steel], [with] [without] outlet.
- c. No Hub Bottom Outlets: DN150 galvanized steel.
- d. Rebar Supports: Galvanized steel.
- e. Step Connector Plates: Galvanized steel.
- f. Anti-vandalism Locking Device: Stainless steel.

D. Drainage Channel System: "FILCOTEN pro 200".

Specifier Notes: Specify galvanized steel, stainless steel, or cast iron edges.

1. Precast concrete drainage channels with concreted [galvanized steel] [stainless steel] [cast iron] edges.
2. Channel Body Material: Fiber-reinforced concrete composite.
 - a. Fiber Content: Minimum 0.4 percent by volume.
3. Load Class: A15kN to E600kN.
4. Tested: EN 1433.
5. Certified: CE.
6. Length per Section: 1,000 mm.
7. Width:
 - a. Overall: 238 mm.
 - b. Nominal: 200 mm.
8. Overall Height: 265 to 365 mm.
9. Wall Thickness: 19 mm.
10. Weight per Section without Grating:

Specifier Notes: Include weight per section without grating for specified edges.

- a. Galvanized Steel Edges: 44.0 to 62.7 kg.
- b. Stainless Steel Edges: 44.0 to 62.7 kg.
- c. Cast Iron Edges: 44.8 to 63.6 kg.

Specifier Notes: Specify without or with internal slope.

11. Internal Slope: [Without slope] [0.5 percent].

Specifier Notes: Specify with or without bottom outlet.

12. Bottom Outlet: [With] [Without].
13. Cross Bars: None in channel cross section.
14. Sealant Joints: Male side of channel body.
15. Integrated Anchoring Ribs: For mechanical fixing in concrete casing.
16. Surface:
 - a. Exterior: Rough for good adhesion to concrete casing.
 - b. Interior: Smooth for maximum discharge rate.
17. Mineral-Based Material: 100 percent.
18. Recyclable: 100 percent.
19. Accessories:

Specifier Notes: Specify required accessories. Delete accessories not required.

- a. Sump:

- 1) Material: Precast fiber-reinforced composite concrete with concreted edge matching channels.

Specifier Notes: Silt bucket and odor trap are optional. Delete if not required.

- 2) Silt Bucket: Plastic.
- 3) Odor Trap: Plastic.
- b. Front and End Plates: DN200 [galvanized steel] [stainless steel], [with] [without] outlet.
- c. No Hub Bottom Outlets: DN200 galvanized steel.
- d. Pipe Connectors: DN200 PVC.
- e. Step Connector Plates: Galvanized steel.
- f. Anti-vandalism Locking Device: Stainless steel.

E. Drainage Channel System: "FILCOTEN pro 300".

Specifier Notes: Specify galvanized steel or cast iron edges.

1. Precast concrete drainage channels with concreted [galvanized steel] [cast iron] edges.
2. Channel Body Material: Fiber-reinforced concrete composite.
 - a. Fiber Content: Minimum 0.4 percent by volume.
3. Load Class: A15kN to E600kN.
4. Tested: EN 1433.
5. Certified: CE.
6. Length per Section: 1,000 mm.
7. Width:
 - a. Overall: 360 mm.
 - b. Nominal: 300 mm.
8. Overall Height: 360 to 460 mm.
9. Wall Thickness: 19 mm.
10. Weight per Section without Grating:

Specifier Notes: Include weight per section without grating for specified edges.

- a. Galvanized Steel Edges: 74.3 to 107.7 kg.
- b. Cast Iron Edges: 77.3 to 110.7 kg.

Specifier Notes: Specify without or with internal slope.

11. Internal Slope: [Without slope] [0.5 percent].

Specifier Notes: Specify with or without bottom outlet.

12. Bottom Outlet: [With] [Without].
13. Cross Bars: None in channel cross section.
14. Sealant Joints: Male side of channel body.

15. Integrated Anchoring Ribs: For mechanical fixing in concrete casing.
16. Surface:
 - a. Exterior: Rough for good adhesion to concrete casing.
 - b. Interior: Smooth for maximum discharge rate.
17. Mineral-Based Material: 100 percent.
18. Recyclable: 100 percent.
19. Accessories:

Specifier Notes: Specify required accessories. Delete accessories not required.

- a. Sump:
 - 1) Material: Precast fiber-reinforced composite concrete with concreted edge matching channels.

Specifier Notes: Silt bucket and odor trap are optional. Delete if not required.

- 2) Silt Bucket: Galvanized steel.
- 3) Odor Trap: Plastic.
- b. Front and End Plates: DN200 [galvanized steel] [stainless steel], [with] [without] outlet.
- c. No Hub Bottom Outlets: DN200 galvanized steel.
- d. End Caps for Catch Basins: Connection cut-outs, galvanized steel.
- e. Catch basin extension unit.
- f. Pipe Connectors: DN200 PVC.
- g. Step Connector Plates: Galvanized steel.

2.3 GRATINGS

Specifier Notes: Specify required gratings. Delete gratings not required.

- A. (Gratings to be added to this guide specification at a later date.)

PART 3 EXECUTION

3.1 EXAMINATION

- A. Examine areas to receive drainage channel system.
- B. Notify Architect of conditions that would adversely affect installation or subsequent use.
- C. Do not begin installation until unacceptable conditions are corrected.

3.2 INSTALLATION

- A. Install drainage channel system in accordance with manufacturer's instructions at locations indicated on the Drawings.

- B. Excavate trenches to ensure proper thickness of concrete beneath and on both sides of channels are maintained and are in accordance with specified load rating.
- C. Install drainage channel system to elevations and slopes indicated on the Drawings.
- D. Ensure directional flow arrows located on channels are pointing in direction of flow, toward catch basins and evacuation outlets.
- E. Install catch basins at elevations indicated on the Drawings.
- F. Apply silicon sealant to make joints watertight.
- G. Install temporary blank grate inserts to keep concrete, sediment, and debris out of channel drains during installation of drainage channel system.
- H. Concrete:
 - 1. Place concrete beneath and on both sides of drainage channel system in accordance with specified load rating and as indicated on the Drawings.
 - 2. Minimum Concrete Compressive Strength: 4,000 psi at 28 days.
 - 3. Concrete: Specified in Section 03 30 00.
- I. Recess Top of Drainage Channel System:
 - 1. Pedestrian Applications: 1/8 inch below concrete finish grade.
 - 2. Traffic-Bearing Applications: 1/4 inch below concrete finish grade.
- J. Allow concrete to cure to specified compressive strength.
- K. Ensure sediment and debris does not collect in drainage channel system.
- L. Install channel grates in accordance with manufacturer's instructions to meet load rating.

3.3 ADJUSTING

- A. Remove and replace with new material, damaged components that cannot be successfully repaired, as determined by Architect.

3.4 CLEANING

- A. Clean drainage channel system of accumulated sediment and debris before final project completion.

3.5 PROTECTION

- A. Protect Work of this Section to ensure that, except for normal weathering, Work will be without damage or deterioration at time of Substantial Completion.

END OF SECTION