SECTION 33 40 00

DRAINAGE AND CONTAINMENT

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\*\* NOTE TO SPECIFIER \*\* MultiDrain Systems; pre-engineered trench drain systems.  
This section is based on the products of MultiDrain Systems, which is located at:  
P. O. Box 7107  
Statesville, NC 28687  
Toll Free Tel: 800-433-1119  
Tel: 704-508-1010  
Fax: 704-508-1011  
Email: [request info (steve.born@multidrainsystems.com)](https://admin.arcat.com/users.pl?action=UserEmail&company=MultiDrain+Systems&coid=40880&rep=&fax=704-508-1011&message=RE:%20Spec%20Question%20(02600mds):%20%20&mf=)  
Web: <http://www.multidrainsystems.com>   
 [ [Click Here](https://www.arcat.com/arcatcos/cos40/arc40880.html) ] for additional information.  
MultiDrain Systems is a manufacturer and distributor of pre-engineered trench drain systems. Our surface drainage products, which can be installed using existing construction techniques, are simple, economic, and heavy duty. That means no elaborate instructions and no unfamiliar methods.  
Our product line includes the EconoDrain® EPS forming system, EconoDrain PT-3™ heavy-duty trench drain system, MultiDrain® steel trench drain, and Alfa Channel® polymer concrete trench drain. Each system uses different materials and means to fulfill a specific site drainage need.

1. GENERAL
   1. SECTION INCLUDES

\*\* NOTE TO SPECIFIER \*\* Delete items below not required for project.

* + 1. Trench drain forming system. (EconoDrain)
    2. Extra Heavy Duty trench drain forming system. (EconoDrain PT-2)
    3. Metal trench drain system. (MultiDrain)
    4. Polymer concrete trench drain system. (Alfa Channel)
  1. RELATED SECTIONS

\*\* NOTE TO SPECIFIER \*\* Delete any sections below not relevant to this project; add others as required.

* + 1. Section 33 44 13.13 - Catchbasins.
    2. Section 33 49 23 - Storm Drainage Water Retention Structures.
    3. Section 33 46 13.13 - Foundation Drainage Piping.
    4. Section 03 10 00 - Concrete Forming and Accessories.
    5. Section 03 15 00 - Concrete Accessories.
    6. Section 05 50 00 - Metal Fabrications.
    7. Section 05 53 00 - Metal Gratings.
    8. Section 05 53 00 - Metal Gratings.
    9. Section 05 53 00 - Metal Gratings.
    10. Section 05 56 00 - Metal Castings.
    11. Section 22 14 26.13 - Roof Drains.
  1. REFERENCES

\*\* NOTE TO SPECIFIER \*\* Delete references from the list below that are not actually required by the text of the edited section.

* + 1. AASHTO M306-FAA - Standard Specification for Drainage, Sewer, Utility and Related Castings.
    2. American Welding Society (AWS):
       1. AWS D1.1 - Welding Code.
       2. AWS D1.6 - Structural Welding Code.
    3. ASTM International (ASTM):
       1. ASTM A36 - Standard Specification for Carbon Structural Steel.
       2. ASTM A48 - Standard Specification for Gray Iron Castings.
       3. ASTM A276 - Standard Specification for Stainless Steel Bars and Shapes.
       4. ASTM A536 - Standard Specification for Ductile Iron Castings.
       5. ASTM C578 - Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation.
       6. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
    4. Federal Specification A-A-60005 - Frames, Covers, Gratings, Steps, Sum and Catch Basin, Manhole.
  1. SUBMITTALS
     1. Submit under provisions of Section 01 30 00 - Administrative Requirements.
     2. Product Data: Manufacturer's data sheets on each product to be used, including:
        1. Preparation instructions and recommendations.
        2. Storage and handling requirements and recommendations.
        3. Installation methods.
     3. Shop Drawings: Provide a general layout indicating invert and outlet elevation with slope at each trench section. Locate catch basins required and outlet piping connection locations and details. Provide details at field installed connections and components.
  2. QUALITY ASSURANCE
     1. Components of the system shall be from one manufacturer.
     2. Expanded Polystyrene Foam (EPS) Formers: Comply with ASTM C578.
        1. Flame Spread and Smoke Developed: ASTM E84.
     3. Grate Rail Frames: Comply with the following.
        1. Steel Angle Rails: ASTM A36.
        2. Stainless Steel Rails: ASTM A276.
        3. Concrete Anchors: AWS D1.1 for steel, and AWS D1.6 for stainless steel.
     4. Gratings: Comply with the following.
        1. Federal Specification A-A-60005; 12 inch (305 mm) width and larger.
        2. AASHTO M306; 12 inch (305 mm) width and larger. H-20 and HS-25 load performance.
        3. Cast Gray Iron: ASTM A48, Class 35B.
        4. Ductile Iron: ASTM A536, 60-45-12.

\*\* NOTE TO SPECIFIER \*\* Include a mock-up if the project size and/or quality warrant taking such a precaution. The following is one example of how a mock-up on a large project might be specified. When deciding on the extent of the mock-up, consider all the major different types of work on the project.

* + 1. Mock-Up: Provide a mock-up for evaluation of surface preparation techniques and application workmanship.
       1. Install sections designated by Architect.
       2. Do not proceed with remaining work until workmanship and performance are approved by Architect.
       3. Rework mock-up area as required to produce acceptable work.
  1. DELIVERY, STORAGE, AND HANDLING
     1. Store products in manufacturer's unopened packaging until ready for installation.
  2. PROJECT CONDITIONS
     1. Protect insulating forms from damage.
  3. WARRANTY
     1. Provide manufacturer's standard one (1) year limited warranty covering material and manufacturing defects.

1. PRODUCTS
   1. MANUFACTURERS
      1. Acceptable Manufacturer: MultiDrain Systems, which is located at: P. O. Box 7107; Statesville, NC 28687; Toll Free Tel: 800-433-1119; Tel: 704-508-1010; Fax: 704-508-1011; Email: [request info (steve.born@multidrainsystems.com)](https://admin.arcat.com/users.pl?action=UserEmail&company=MultiDrain+Systems&coid=40880&rep=&fax=704-508-1011&message=RE:%20Spec%20Question%20(02600mds):%20%20&mf=); Web: <http://www.multidrainsystems.com>

\*\* NOTE TO SPECIFIER \*\* Delete one of the following two paragraphs; coordinate with requirements of Division 1 section on product options and substitutions.

* + 1. Substitutions: Not permitted.
    2. Requests for substitutions will be considered in accordance with provisions of Section 01 60 00 - Product Requirements.
  1. TRENCH DRAINS

\*\* NOTE TO SPECIFIER \*\* The following specification is for a 4 inch (102 mm) trench width utilizing a 5-1/2 inches to 6 inches (140 mm to 152 mm) wide grate/cover. These systems are suitable for both indoor and outdoor applications requiring H-20 loading. Alternate grates for ADA applications are included. In areas subject to solid tire forklift traffic or other ex- heavy vehicles turning while on top of the grate, a ductile iron grate may be advisable dependent upon actual loading.

* + 1. Product: No. 4 EconoDrain 4.5 inch (114 mm) Trench Drain Forming System as manufactured by MultiDrain Systems, including EPS forms, grating/cover seat, grating and/or covers and system accessories.
       1. Construction: The trench drain system shall be EconoDrain No. 4 consisting of non-CFC Expanded Polystyrene Foam (EPS) interlocking pre-sloped removable forms having a minimum slope of 0.5 percent (1/16 inch per lineal foot of trench) and installed in standard 8 foot (2438 mm) sections, pre-welded grate frames anchored securely in concrete, common rebar used for form stability and anti-flotation during pour and gratings.
       2. Expanded Polystyrene Foam (EPS):
          1. EPS shall be non-CFC foam with a flame spread of less than 25 and Smoke Developed rating of less than 450 per ASTM E84 test method.
       3. Grate Seat Rails:
          1. Left and right rail shall be affixed together and pre-welded to assure proper symmetry and planar accuracy.

\*\* NOTE TO SPECIFIER \*\* Delete material options not required.

* + - * 1. Material: Mild steel rails. Black, polyester powder coating.
        2. Material: Mild steel rails. Galvanized.
        3. Material: Stainless steel.
        4. Alignment clips shall be provided at the rail end welded to the angle frame.
        5. Eight anchor stands shall be provided per 8 foot length to aid installation stability; allow simple grade adjustment and provide grate rail pull out resistance. The anchor stands shall be fully welded to the angle frame.
        6. Each rail shall provide a means to mechanically lock itself into the surrounding concrete. Rail pull out resistance shall not be less than 2,480 lb per lineal foot (36 kN per m).

\*\* NOTE TO SPECIFIER \*\* Select grate. Delete one of the next paragraphs.

* + - 1. Grate: EG-0424-1DI-B. 5-1/4 x 24 inch (133 x 610 mm); Secured to steel rails with locking device assembly ELD04.
         1. Material: Ductile iron.
         2. Open Area: 64.1 percent.
         3. Load Rating: HS-25.
      2. Grate: EG-0424-1DI-ADA. ADA Compliant 5-1/4 x 24 inch (133 x 610 mm); Secured to steel rails with locking device assembly ELD04.
         1. Material: Ductile iron.
         2. Open Area: 30.4 percent.
         3. Load Rating: HS-25.
      3. Grate: EG-0424-1DI-A. 5-1/4 x 24 inch (133 x 610 mm); Secured to steel rails with locking device assembly ELD04.
         1. Material: Ductile iron.
         2. Open Area: 51.9 percent.
         3. Load Rating: H-20 and HS-25.
      4. Grate: EG-0424-1CI-B2. 5-1/4 x 24 inch (133 x 610 mm); Secured to steel rails with locking device assembly ELD04.
         1. Material: Cast iron.
         2. Open Area: 55 percent.
         3. Load Rating: H-20.
      5. Grate: EG-0448-RGSC. 5-1/4 x 48 inch (133 x 1219 mm); Secured to steel rails with locking device assembly ELD04-1.
         1. Material: Reinforced galvanized steel.
         2. Open Area: 0 percent (Closed).
         3. Load Rating: H-20.
      6. Grate: EG-0448-RSSC. 5-1/4 x 48 inch (133 x 1219 mm); Secured to steel rails with locking device assembly ELD04-1.
         1. Material: Reinforced stainless steel.
         2. Open Area: 0 percent (Closed).
         3. Load Rating: H-20.
      7. Grate: EG-0448-RGSB. 5-1/4 x 48 inch (133 x 1219 mm); Secured to steel rails with locking device assembly ELD04.
         1. Material: Reinforced galvanized steel; slotted.
         2. Open Area: 17 percent.
         3. Load Rating: H-20.
      8. Grate: EG-0448-RSSB. 5-1/4 x 48 inch (133 x 1219 mm); Secured to steel rails with locking device assembly ELD04.
         1. Material: Reinforced stainless steel; slotted.
         2. Open Area: 17 percent.
         3. Load Rating: H-20.
      9. Grate: EG-0448-GSB. 5-1/4 x 48 inch (133 x 1219 mm); Secured to steel rails with locking device assembly ELD04.
         1. Material: Galvanized steel; slotted.
         2. Open Area: 17 percent.
         3. Load Rating: Pedestrian.
      10. Grate: EG-0448-SSB. 5-1/4 x 48 inch (133 x 1219 mm); Secured to steel rails with locking device assembly ELD04.
          1. Material: Stainless steel; slotted.
          2. Open Area: 17 percent.
          3. Load Rating: Pedestrian.
      11. Grate: EG-0448-GSP. 5-1/4 x 48 inch (133 x 1219 mm); Secured to steel rails with locking device assembly ELD04-1.
          1. Material: Galvanized steel; perforated.
          2. Open Area: 8.5 percent.
          3. Load Rating: Pedestrian.
      12. Grate: EG-0448-SSP. 5-1/4 x 48 inch (133 x 1219 mm); Secured to steel rails with locking device assembly ELD04.
          1. Material: Stainless steel; perforated.
          2. Open Area: 8.5 percent.
          3. Load Rating: Pedestrian.
      13. Grate: EG-0448-RGSP. 5-1/4 x 48 inch (133 x 1219 mm); Secured to steel rails with locking device assembly ELD040-1.
          1. Material: Reinforced galvanized steel; perforated.
          2. Open Area: 8.5 percent.
          3. Load Rating: H-20.
      14. Grate: EG-0448-RSSP. 5-1/4 x 48 inch (133 x 1219 mm); Secured to steel rails with locking device assembly ELD04-1.
          1. Material: Reinforced stainless steel; perforated.
          2. Open Area: 8.5 percent.
          3. Load Rating: H-20.
      15. Catch Basins:

\*\* NOTE TO SPECIFIER \*\* Delete catch basins not required from the next five paragraphs.

* + - * 1. ECB0424: 4.5 x 24 x 24 inch (114 x 610 x 610 mm) inline catch basin assembly consisting of EPS former, pre-welded grate frame and grate.
        2. ECB2424: 24 x 24 x 24 inch (610 x 610 x 610 mm) catch basin assembly consisting of EPS former, pre-welded grate frame and grate.
        3. ECB2436: 24 x 24 x 36 inch (610 x 610 x 915 mm) catch basin assembly consisting of EPS former, pre-welded grate frame and grate.
        4. ECB2442: 24 x 24 x 42 inch (610 x 610 x 1067 mm) catch basin assembly consisting of EPS former, pre-welded grate rail and grate.
        5. ECB3360: 32.625 x 32.625 x up to 60 inch (828 x 828 x up to 1,524 mm) catch basin assembly consisting of EPS former, pre-welded grate frame and grate.
      1. Form Release: EconoDrain Form Release Part Number RA1G or RA5G.

\*\* NOTE TO SPECIFIER \*\* The following specification is for a 6 inch (152 mm) trench width utilizing an 8 inches (203 mm) wide grate/cover. These systems are suitable for both indoor and outdoor applications requiring H-20 loading. In areas subject to solid tire forklift traffic or other ex- heavy vehicles turning while on top of the grate, a ductile iron grate may be advisable dependent upon actual loading. Delete if not required.

* + 1. Product: No. 6 EconoDrain 6 inch (152 mm) Trench Drain Forming System as manufactured by MultiDrain Systems, including EPS forms, grating/cover seat, grating and/or covers and system accessories.
       1. Construction: The trench drain system shall be EconoDrain No. 6 consisting of non-CFC Expanded Polystyrene Foam (EPS) interlocking pre-sloped removable forms having a minimum slope of 0.5 percent (1/16 inch per lineal foot of trench) and installed in standard 8 foot (2438 mm) sections, pre-welded grate frames or Bolt-In-Place grate rail spacer bars anchored securely in concrete, common rebar used for form stability and anti-flotation during pour and gratings.
       2. Expanded Polystyrene Foam (EPS):
          1. EPS shall be non-CFC foam with a flame spread of less than 25 and Smoke Developed rating of less than 450 per ASTM E84 test method.
       3. Grate Seat Rails:
          1. Left and right rail shall be affixed together with pre-welded spacer rods or Bolt-In-Place grate rail spacer bars to assure proper symmetry and planar accuracy.

\*\* NOTE TO SPECIFIER \*\* Delete materials not required.

* + - * 1. Material: Mild steel rails. Black, polyester powder coating.
        2. Material: Mild steel rails. Galvanized.
        3. Material: Stainless steel.
        4. Alignment clips shall be provided at the rail end welded to the angle frame.
        5. Eight anchor stands shall be provided per 8 foot (2438 mm) length to aid installation stability; allow simple grade adjustment and provide grate rail pull out resistance. The anchor stands shall be fully welded to the angle frame.
        6. Each rail shall provide a means to mechanically lock itself into the surrounding concrete. Rail pull out resistance shall not be less than 5,526 lb per lineal foot (80 kN per m).

\*\* NOTE TO SPECIFIER \*\* Select grate. Delete four of the next five paragraphs.

* + - 1. Grate: EG-0824-1DI-A. 8 x 24 inch (203 x 610 mm); Secured to steel rails with locking device assembly ELD06.
         1. Material: Ductile iron.
         2. Open Area: 63.5 percent.
         3. Load Rating: HS25.
      2. Grate: EG-0824-1DIADA. ADA Compliant 8 x 24 inch (203 x 610 mm); Secured to steel rails with locking device assembly ELD06.
         1. Material: Ductile iron.
         2. Open Area: 38.1 percent.
         3. Load Rating: HS25.
      3. Grate: Banded Bar Grate: EG-0836-HPBG.
         1. Material: Steel. Shop black.
         2. Open Area: 66 percent.
         3. Square Inches per Linear Foot: 63.3.
      4. Grate: Banded Bar Grate: EG-0836-HGBG.
         1. Material: Steel. Galvanized coated.
         2. Open Area: 66 percent.
         3. Square Inches per Linear Foot: 63.3.
      5. Grate: Banded Bar Grate: EG-0836-HSBG.
         1. Material: Stainless steel.
         2. Open Area: 66 percent.
         3. Square Inches per Linear Foot: 63.3.
      6. Catch Basins:

\*\* NOTE TO SPECIFIER \*\* Delete catch basins not required from the next five paragraphs.

* + - * 1. ECB0624: 6 x 24 x 24 inch (152 x 610 x 610 mm) inline catch basin assembly consisting of EPS former, pre-welded grate frame or Bolt-In-Place grate rail and grate.
        2. ECB2424: 24 x 24 x 24 inch (610 x 610 x 610 mm) catch basin assembly consisting of EPS former, pre-welded grate frame and grate.
        3. ECB2436: 24 x 24 x 36 inch (610 m x 610 x 915 mm) catch basin assembly consisting of EPS former, pre-welded grate frame and grate.
        4. ECB2442: 24 x 24 x 42 inch (610 x 610 x 1067 mm) catch basin assembly consisting of EPS former, pre-welded grate frame and grate.
        5. ECB3360: 32.625 x 32.625 x up to 60 inch (828 x 828 x up to 1,524 mm) catch basin assembly consisting of EPS former, pre-welded grate frame and grate.
      1. Form Release: EconoDrain Form Release Part Number RA1G or RA5G.

\*\* NOTE TO SPECIFIER \*\* The following specification is for an 8 inch (203 mm) trench width utilizing a 10 inches (254 mm) wide grate/cover. These systems are suitable for both indoor and outdoor applications requiring H-20 loading. Alternate grates for ADA applications are included. In areas subject to solid tire forklift traffic or other ex- heavy vehicles turning while on top of the grate, a ductile iron grate may be advisable dependent upon actual loading. Delete if not required.

* + 1. Product: No. 8 EconoDrain 8 inch (203 mm) Trench Drain Forming System as manufactured by MultiDrain Systems, including EPS forms grating/cover seat, grating and/or covers and system accessories.
       1. Construction: The trench drain system shall be EconoDrain No. 8 consisting of non-CFC Expanded Polystyrene Foam (EPS) interlocking pre-sloped removable forms having a minimum slope of 0.5 percent (1/16 inch per lineal foot of trench) and installed in standard 8 foot (2438 mm) sections, pre-welded grate frames or Bolt-In-Place grate rail spacer bars anchored securely in concrete, common rebar used for form stability and anti-flotation during pour and gratings.
       2. Expanded Polystyrene Foam (EPS):
          1. EPS shall be non-CFC foam with a flame spread of less than 25 and Smoke Developed rating of less than 450 per ASTM E84 test method.
       3. Grate Seat Rails:
          1. Left and right rail shall be affixed together with pre-welded spacer rods or Bolt-In-Place grate rail spacer bars to assure proper symmetry and planar accuracy.

\*\* NOTE TO SPECIFIER \*\* Delete material options not required.

* + - * 1. Material: Mild steel rails. Black, polyester powder coating.
        2. Material: Mild steel rails. Galvanized.
        3. Material: Stainless steel.
        4. Alignment clips shall be provided at the rail end welded to the angle frame.
        5. Eight anchor stands shall be provided per 8 foot (2438 mm) length to aid installation stability; allow simple grade adjustment and provide grate rail pull out resistance. The anchor stands shall be fully welded to the angle frame.
        6. Each rail shall provide a means to mechanically lock itself into the surrounding concrete. Rail pull out resistance shall not be less than 5,526 lb per lineal foot (80 kN per m).

\*\* NOTE TO SPECIFIER \*\* Select grate. Delete four of the next five paragraphs.

* + - 1. Grate: EG-1024-1DI-A2. 10 x 24 inch (254 x 610 mm); secured to steel rails with locking device assembly ELD08.
         1. Material: Ductile iron.
         2. Open Area: 66.3 percent
         3. Load Rating: HS25
      2. Grate: EG-1016-1DI-ADA. ADA Compliant 10 x 16 inch (254 x 406 mm); secured to steel rails with locking device assembly ELD08-1.
         1. Material: Ductile iron.
         2. Open Area: 48 percent.
         3. Load Rating: HS-25/FAA.
      3. Grate: Banded Bar Grate: EG-1036-HPBG.
         1. Material: Steel. Shop black.
         2. Open Area: 68.4 percent.
         3. Square Inches per Linear Foot: 82.
      4. Grate: Banded Bar Grate: EG-1036-HGBG.
         1. Material: Steel. Galvanized coated.
         2. Open Area: 68.4 percent.
         3. Square Inches per Linear Foot: 82.
      5. Grate: Banded Bar Grate: EG-1036-HSBG.
         1. Material: Stainless steel.
         2. Open Area: 68.4 percent.
         3. Square Inches per Linear Foot: 82.
      6. Catch Basins:

\*\* NOTE TO SPECIFIER \*\* Delete catch basins not required from the next five paragraphs.

* + - * 1. ECB0824: 8 x 24 x 24 inch (204 x 610 x 610 mm) inline catch basin assembly consisting of EPS former, pre-welded grate frame or Bolt-In-Place grate rail and grate.
        2. ECB2424: 24 x 24 x 24 inch (610 x 610 x 610 mm) catch basin assembly consisting of EPS former, pre-welded grate frame and grate.
        3. ECB2436: 24 x 24 x 36 inch (610 x 610 x 915 mm) catch basin assembly consisting of EPS former, pre-welded grate frame and grate.
        4. ECB2442: 24 x 24 x 42 inch (610 x 610 x 1067 mm) catch basin assembly consisting of EPS former, pre-welded grate rail and grate.
        5. ECB3360: 32.626 x 32.625 x up to 60 inch (828 x 828 x up to 1,524 mm) catch basin assembly consisting of EPS former, pre-welded grate frame and grate.
      1. Form Release: EconoDrain Form Release Part Number RA1G or RA5G.

\*\* NOTE TO SPECIFIER \*\* The following specification is for an 10 inch (254 mm) trench width utilizing a 12 inches (305 mm) wide grate/cover. These systems are suitable for both indoor and outdoor applications requiring H-20 loading. Alternate grates for ADA applications are included. In areas subject to solid tire forklift traffic or other ex- heavy vehicles turning while on top of the grate, a ductile iron grate may be advisable dependent upon actual loading. Delete if not required.

* + 1. Product: No. 10 EconoDrain 10 inch (254 mm) Trench Drain Forming System as manufactured by MultiDrain Systems, including EPS forms grating/cover seat, grating and/or covers and system accessories.
       1. Construction: The trench drain system shall be EconoDrain No. 10 consisting of non-CFC Expanded Polystyrene Foam (EPS) interlocking pre-sloped removable forms having a minimum slope of 0.5 percent (1/16 inch per lineal foot of trench) and installed in standard 8 foot (2438 mm) sections, Bolt-In-Place grate rail spacer bars anchored securely in concrete. Common rebar used for form stability and anti-flotation during pour and gratings.
       2. Expanded Polystyrene Foam (EPS):
          1. EPS shall be non-CFC foam with a flame spread of less than 25 and Smoke Developed rating of less than 450 per ASTM E84 test method.
       3. Grate Seat Rails:
          1. Left and right rail shall be affixed together with Bolt-In-Place grate rail spacer bars to assure proper symmetry and planar accuracy.

\*\* NOTE TO SPECIFIER \*\* Delete materials not required.

* + - * 1. Material: Mild steel rails. Black, polyester powder coating.
        2. Material: Mild steel rails. Galvanized.
        3. Material: Stainless steel.
        4. Alignment clips shall be provided at the rail end welded to the angle frame.
        5. Eight anchor stands shall be provided per 8 foot (2438 mm) length to aid installation stability; allow simple grade adjustment and provide grate rail pull out resistance. The anchor stands shall be fully welded to the angle frame.
        6. Each rail shall provide a means to mechanically lock itself into the surrounding concrete. Rail pull out resistance shall not be less than 5,526 lb per lineal foot (80 kN per m).

\*\* NOTE TO SPECIFIER \*\* Select grate. Delete three of the next four paragraphs.

* + - 1. Grate: EG-1224-1-DI-A. 12 x 24 inch (305 x 610 mm); secured to steel rails with locking device assembly ELD10.
         1. Material: Ductile iron.
         2. Open Area: 64.8 percent.
         3. Load Rating: HS25.
      2. Banded Grate: EG-1236-HPBG.
         1. Material: Steel. Shop black.
         2. Open Area: 67.5 percent.
         3. Square Inches per Foot: 97.3.
      3. Banded Bar Grate: EG-1236-HGBG.
         1. Material: Steel. Galvanized coated.
         2. Open Area: 67.5 percent.
         3. Square Inches per Foot: 97.3.
      4. Banded Bar Grate: EG-1236-HSBG.
         1. Material: Stainless steel.
         2. Open Area: 67.5 percent.
         3. Square Inches per Foot: 97.3.
      5. Catch Basins:

\*\* NOTE TO SPECIFIER \*\* Delete catch basins not required from the next five paragraphs.

* + - * 1. ECB1024: 10 x 24 x 24 inch (250 x 610 x 610 mm) inline catch basin assembly consisting of EPS former, Bolt-In-Place grate rail and grate.
        2. ECB2424: 24 x 24 x 24 inch (610 x 610 x 610 mm) catch basin assembly consisting of EPS former, pre-welded grate frame and grate.
        3. ECB2436: 24 x 24 x 36 inch (610 x 610 x 915 mm) catch basin assembly consisting of EPS former, pre-welded grate frame and grate.
        4. ECB2442: 24 x 24 x 42 inch (610 x 610 x 1067 mm) catch basin assembly consisting of EPS former, pre-welded grate frame and grate.
        5. ECB3360: 32.625 x 32.625 x up to 60 inch (828 x 828 x up to 1,524 mm) catch basin assembly consisting of EPS former, pre-welded grate frame and grate.
      1. Form Release: EconoDrain Form Release Part Number RA1G or RA5G.

\*\* NOTE TO SPECIFIER \*\* The following specification is for a 12 inch (305 mm) trench width utilizing a 14 inches (356 mm) wide grate/cover. These systems are suitable for both indoor and outdoor applications requiring H-20 loading. Alternate grates for ADA applications are included. In areas subject to solid tire forklift traffic or other ex- heavy vehicles turning while on top of the grate, a ductile iron grate may be advisable dependent upon actual loading. Delete if not required.

* + 1. Product: No. 12 EconoDrain 12 inch (305 mm) Trench Drain Forming System as manufactured by MultiDrain Systems, including grating/cover seat, grating and/or covers and system accessories.
       1. Construction: The trench drain system shall consist of non-CFC Expanded Polystyrene Foam (EPS) interlocking pre-sloped removable forms having a minimum slope of 0.5 percent (1/16 inch per lineal foot of trench) and installed in standard 8 foot (2438 mm) sections, pre-welded grate frames or Bolt-In-Place grate rail spacer bar, anchored securely in concrete, common rebar used for form stability and anti-flotation during pour and gratings.
       2. Expanded Polystyrene Foam (EPS):
          1. EPS shall be non-CFC foam with a flame spread of less than 25 and Smoke Developed rating of less than 450 per ASTM E84 test method.
       3. Grate Seat Rails:
          1. Left and right rail shall be affixed together and pre-welded or Bolt-In-Place grate rail spacer bar to assure proper symmetry and planar accuracy.

\*\* NOTE TO SPECIFIER \*\* Delete materials not required.

* + - * 1. Material: Mild steel rails. Black, polyester powder coating.
        2. Material: Mild steel rails. Galvanized.
        3. Material: Stainless steel.
        4. Alignment clips shall be provided at the rail end welded to the angle frame.
        5. Eight anchor stands shall be provided per 8 foot (2438 mm) length to aid installation stability; allow simple grade adjustment and provide grate rail pull out resistance. The anchor stands shall be fully welded to the angle frame.
        6. Each rail shall provide a means to mechanically lock itself into the surrounding concrete. Rail pull out resistance shall not be less than 5,526 lb per lineal foot (80 kN per m).

\*\* NOTE TO SPECIFIER \*\* Select grate. Delete four of the next five paragraphs.

* + - 1. Grate: EG-1424-1DI-A2P. 14 x 24 inch (355 x 610 mm); secured to steel rails with locking device assembly ELD12.
         1. Material: Ductile iron.
         2. Open Area: 67 percent.
         3. Load Rating: HS25.
      2. Grate: EG-1424-1DI-ADA. ADA Compliant 14 x 24 inch (355 x 610 mm); secured to steel rails with locking device assembly ELD12.
         1. Material: Ductile iron.
         2. Open Area: 33.1 percent.
         3. Load Rating: HS25.
      3. Grate: Banded Bar Grate; EG-1436-HPBG.
         1. Material: Steel. Shop black.
         2. Open Area: 67 percent.
         3. Square Inches per Linear Foot: 112.5.
      4. Grate: Banded Bar Grate; EG-1436-HGBG.
         1. Material: Steel. Galvanized coated.
         2. Open Area: 67 percent.
         3. Square Inches per Linear Foot: 112.5.
      5. Grate: Banded Bar Grate; 1436-HSBG.
         1. Material: Stainless steel.
         2. Open Area: 67 percent.
         3. Square Inches per Linear Foot: 112.5.
      6. Catch Basins:

\*\* NOTE TO SPECIFIER \*\* Delete catch basins not required from the next three paragraphs.

* + - * 1. ECB1224: 12 x 24 x 24 inch (305 x 610 x 610 mm) inline catch basin assembly consisting of EPS former, pre-welded grate frame or Bolt-In-Place grate rail and grate.
        2. ECB2424: 24 x 24 x 24 inch (610 x 610 x 610 mm) catch basin assembly consisting of EPS former, pre-welded grate frame and grate.
        3. ECB2436: 24 x 24 x 36 inch (610 x 610 x 915 mm) catch basin assembly consisting of EPS former, pre-welded grate frame and grate.
        4. ECB2442: 24 x 24 x 42 inch (610 x 610 x 1067 mm) catch basin assembly consisting of EPS former, pre-welded grate frame and grate.
        5. ECB3360: 32.625 x 32.625 x up to 60 inch (828 x 828 x up to 1,524 mm) catch basin assembly consisting of EPS former, pre-welded grate frame and grate.
      1. Form Release: EconoDrain Form Release Part Number RA1G or RA5G.

\*\* NOTE TO SPECIFIER \*\* The following specification is for a 15 inch (381 mm) trench width utilizing a 17 x 24 inch (432 x 609 mm) cast iron grate. These systems are suitable for both indoor and outdoor applications requiring H-20 loading. Alternate grates for ADA applications are included. In areas subject to solid tire forklift traffic or other ex- heavy vehicles turning while on top of the grate, a ductile iron grate may be advisable dependent upon actual loading. Delete if not required.

* + 1. Product: No. 15 EconoDrain 15 inch (381 mm) Trench Drain Forming System as manufactured by MultiDrain Systems, including EPS forms grating/cover seat, grating and/or covers and system accessories.
       1. Construction: The trench drain system shall consist of non-CFC Expanded Polystyrene Foam (EPS) interlocking pre-sloped removable forms having a minimum slope of 0.5 percent (1/16 inch per lineal foot of trench) and installed in standard 8 foot (2438 mm) sections, Bolt-In-Place grate rail spacer bar. grate frames anchored securely in concrete, common rebar used for form stability and anti-flotation during pour and gratings.
       2. Expanded Polystyrene Foam (EPS):
          1. EPS shall be non-CFC foam with a flame spread of less than 25 and Smoke Developed rating of less than 450 per ASTM E84 test method.
       3. Grate Seat Rails:
          1. Left and right rail shall be affixed together with Bolt-In-Place grate rail spacer bar to assure proper symmetry and planar accuracy.

\*\* NOTE TO SPECIFIER \*\* Delete material options not required.

* + - * 1. Material: Mild steel rails. Black, polyester powder coating.
        2. Material: Mild steel rails. Galvanized.
        3. Material: Stainless steel.
        4. Alignment clips shall be provided at the rail end welded to the angle frame.
        5. Eight anchor stands shall be provided per 8 foot (2438 mm) length to aid installation stability; allow simple grade adjustment and provide grate rail pull out resistance. The anchor stands shall be fully welded to the angle frame.
        6. Each rail shall provide a means to mechanically lock itself into the surrounding concrete. Rail pull out resistance shall not be less than 5,526 lb per lineal foot (80 kN per m).

\*\* NOTE TO SPECIFIER \*\* Select grate. Delete three of the next four paragraphs.

* + - 1. Grate: EG-1724-CI-A - 17 x 24 x 1-1/2 inches (432 x 609 x 38 mm)
         1. Material: Cast iron.
         2. Open Area: 35.8 percent.
         3. Load: H-20
      2. Grate: Banded Bar Grate; EG-1736-HPBG.
         1. Material: Steel. Shop black.
         2. Open Area: 67.5 percent.
         3. Square Inches per Linear Foot: 137.3.
      3. Grate: Banded Bar Grate; EG-1736-HGBG.
         1. Material: Steel. Galvanized coated.
         2. Open Area: 67.5 percent.
         3. Square Inches per Linear Foot: 137.3.
      4. Grate: Banded Bar Grate; EG-1736-HSBG.
         1. Material: Stainless steel.
         2. Open Area: 67.5 percent.
         3. Square Inches per Linear Foot: 137.3.
      5. Catch Basins:

\*\* NOTE TO SPECIFIER \*\* Delete catch basin not required.

* + - * 1. ECB1524: 15 x 24 x 24 inches (305 x 610 x 610 mm) inline catch basin assembly consisting of EPS former, Bolt-In-Place grate rail and grate.
        2. ECB2424: 24 x 24 x 24 inches (610 x 610 x 610 mm) catch basin assembly consisting of EPS Former, pre-welded grate frame and grate.
        3. ECB2436: 24 x 24 x 36 inch (610 x 610 x 915 mm) catch basin assembly consisting of EPS former, pre-welded grate frame and grate.
        4. ECB2442: 24 x 24 x 42 inches (610 x 610 x 1067 mm) catch basin assembly consisting of EPS Former, pre-welded grate frame and grate.
        5. ECB3360: 32.625 x 32.625 x up to 60 inch (828 x 828 x up to 1,524 mm) catch basin assembly consisting of EPS former, pre-welded grate frame and grate.
      1. Form Release: EconoDrain Form Release Part Number RA1G or RA5G.

\*\* NOTE TO SPECIFIER \*\* The following specification is for a 18 inch (457 mm) trench width utilizing a 20 x 24 inch (508 x 609 mm) cast iron grate. These systems are suitable for both indoor and outdoor applications requiring H-20 loading. Alternate grates for ADA applications are included. In areas subject to solid tire forklift traffic or other ex- heavy vehicles turning while on top of the grate, a ductile iron grate may be advisable dependent upon actual loading. Delete if not required.

* + 1. Product: No. 18 EconoDrain 18 inch (457 mm) Trench Drain Forming System as manufactured by MultiDrain Systems, including EPS forms, grating/cover seat, grating and/or covers and system accessories.
       1. Construction: The trench drain system shall consist of non-CFC Expanded Polystyrene Foam (EPS) interlocking pre-sloped removable forms having a minimum slope of 0.5 percent (1/16 inch per lineal foot of trench) and installed in standard 8 foot (2438 mm) sections, Bolt-In-Place grate rail spacer bar grate rail anchored securely in concrete, common rebar used for form stability and anti-flotation during pour and gratings.
       2. Expanded Polystyrene Foam (EPS):
          1. EPS shall be non-CFC foam with a flame spread of less than 25 and Smoke Developed rating of less than 450 per ASTM E84 test method.
       3. Grate Seat Rails:
          1. Left and right rail shall be affixed together with Bolt-In-Place grate rail spacer bar to assure proper symmetry and planar accuracy.

\*\* NOTE TO SPECIFIER \*\* Delete materials not required.

* + - * 1. Material: Mild steel rails. Black, polyester powder coating.
        2. Material: Mild steel rails. Galvanized.
        3. Material: Stainless steel.
        4. Alignment clips shall be provided at the rail end welded to the angle frame.
        5. Eight anchor stands shall be provided per 8 foot (2438 mm) length to aid installation stability; allow simple grade adjustment and provide grate rail pull out resistance. The anchor stands shall be fully welded to the angle frame.
        6. Each rail shall provide a means to mechanically lock itself into the surrounding concrete. Rail pull out resistance shall not be less than 5,526 lb per lineal foot (80 kN per m).

\*\* NOTE TO SPECIFIER \*\* Select grate. Delete three of the next four paragraphs.

* + - 1. Grate: EG-2024-DI-A. 20 x 24 x 1-1/2 inch (508 x 609 x 38 mm).
         1. Material: Cast iron.
         2. Open Area: 37 percent.
         3. Load: H-20.
      2. Grate: Banded Bar Grate; EG-2036-HPBG.
         1. Material: Steel. Shop black.
         2. Open Area: 68.8 percent.
         3. Square Inches per Linear Foot: 165.2.
         4. Light Duty.
      3. Grate: Banded Bar Grate; EG-2036-HGBG.
         1. Material: Steel. Galvanized coated.
         2. Open Area: 68.8 percent.
         3. Square Inches per Linear Foot: 165.2.
         4. Light Duty.
      4. Grate: Banded Bar Grate; EG-2036-HSBG.
         1. Material: Stainless steel.
         2. Open Area: 68.8 percent.
         3. Square Inches per Linear Foot: 165.2.
         4. Light duty.
      5. Catch Basins:

\*\* NOTE TO SPECIFIER \*\* Delete catch basins not required from the next five paragraphs.

* + - * 1. ECB1824: 18 x 24 x 24 inch (457 x 610 x 610 mm) inline catch basin assembly consisting of EPS former, Bolt-In-Place, field assembled grate rail and grate.
        2. ECB2424: 24 x 24 x 24 inch (610 x 610 x 610 mm) catch basin assembly consisting of EPS former, pre-welded grate frame and grate.
        3. ECB2436: 24 x 24 x 36 inch (610 x 610 x 915 mm) catch basin assembly consisting of EPS former, pre-welded grate frame and grate.
        4. ECB2442: 24 x 24 x 42 inch (610 x 610 x 1067 mm) catch basin assembly consisting of EPS former, pre-welded grate frame and grate.
        5. ECB3360: 32.625 x 32.625 x up to 60 inch (828 x 828 x up to 1,524 mm) catch basin assembly consisting of EPS former, pre-welded grate frame and grate.
      1. Form Release: EconoDrain Form Release Part Number RA1G or RA5G.

\*\* NOTE TO SPECIFIER \*\* The following specification is for a 24 inch (609 mm) trench width utilizing a 26 x 24 inch (660 x 609 mm) cast iron grate. These systems are suitable for both indoor and outdoor applications requiring H-20 loading. Alternate grates for ADA applications are included. In areas subject to solid tire forklift traffic or other ex- heavy vehicles turning while on top of the grate, a ductile iron grate may be advisable dependent upon actual loading. Delete if not required.

* + 1. Product: No. 24 EconoDrain 24 inch (610 mm) Trench Drain Forming System as manufactured by MultiDrain Systems, including EPS forms grating/cover seat, grating and/or covers and system accessories.
       1. Construction: The trench drain system shall consist of non-CFC Expanded Polystyrene Foam (EPS) interlocking pre-sloped removable forms having a minimum slope of 0.5 percent (1/16 inch per lineal foot of trench) and installed in standard 8 foot (2438 mm) sections, Bolt-In-Place grate rail spacer bars and grate rails anchored securely in concrete, common rebar used for form stability and anti-flotation during pour and gratings.
       2. Expanded Polystyrene Foam (EPS):
          1. EPS shall be non-CFC foam with a flame spread of less than 25 and Smoke Developed rating of less than 450 per ASTM E84 test method.
       3. Grate Seat Rails:
          1. Left and right rail shall be affixed together and Bolt-In-Place spacer bars to assure proper symmetry and planar accuracy.

\*\* NOTE TO SPECIFIER \*\* Delete materials not required.

* + - * 1. Material: Mild steel rails. Black, polyester powder coating.
        2. Material: Mild steel rails. Galvanized.
        3. Material: Stainless steel.
        4. Alignment clips shall be provided at the rail end welded to the angle frame.
        5. Eight anchor stands shall be provided per 8 foot (2438 mm) length to aid installation stability; allow simple grade adjustment and provide grate rail pull out resistance. The anchor stands shall be fully welded to the angle frame.
        6. Each rail shall provide a means to mechanically lock itself into the surrounding concrete. Rail pull out resistance shall not be less than 5,526 lb per lineal foot (80 kN per m).

\*\* NOTE TO SPECIFIER \*\* Select grate. Delete three of the next four paragraphs.

* + - 1. Grate: MG-2624-CI-A. 26 x 24 x 1-1/2 inch (660 x 609 x 38 mm).
         1. Material: Cast iron.
         2. Open Area: 38 percent.
         3. Load: H-20.
      2. Grate: Banded Bar Grate; EG-2636-HPBG.
         1. Material: Steel. Shop black.
         2. Open Area: 70 percent.
         3. Square Inches per Linear Foot: 218.
         4. Light Duty.
      3. Grate: Banded Bar Grate; EG-2636-HGBG.
         1. Material: Steel. Galvanized coated.
         2. Open Area: 70 percent.
         3. Square Inches per Linear Foot: 218.
         4. Light Duty.
      4. Grate: Banded Bar Grate; EG2636-HSBG.
         1. Material: Steel. Galvanized coated.
         2. Open Area: 70 percent.
         3. Square Inches per Linear Foot: 218.
         4. Light duty.
      5. Catch Basins:

\*\* NOTE TO SPECIFIER \*\* Delete catch basins not required from the next five paragraphs.

* + - * 1. ECB2424: 24 x 24 x 24 inch (610 x 610 x 610 mm) inline catch basin assembly consisting of EPS former, Bolt-In-Place grate rail and grate.
        2. ECB2424: 24 x 24 x 24 inch (610 x 610 x 610 mm) catch basin assembly consisting of EPS former, pre-welded grate frame and grate.
        3. ECB2436: 24 x 24 x 36 inch (610 x 610 x 915 mm) catch basin assembly consisting of EPS former, pre-welded grate rail and grate.
        4. ECB2442: 24 x 24 x 42 inch (610 x 610 x 1067 mm) catch basin assembly consisting of EPS former, pre-welded grate frame and grate.
        5. ECB3360: 32.625 x 32.625 x up to 60 inch (828 x 828 x up to 1,524 mm) catch basin assembly consisting of EPS former, pre-welded grate frame and grate.
      1. Form Release: EconoDrain Form Release Part Number RA1G or RA5G.
  1. EXTRA HEAVY DUTY TRENCH DRAINS

\*\* NOTE TO SPECIFIER \*\* The following specification is for the EconoDrain PT-3, a complete pre-engineered trench drain forming system combining the features and advantages of our heavy duty EconoDrain series with added load-carrying capability necessary for airports, seaports and intermodal facilities. The system includes EPS formers for 8 inches and 12 inches (203 mm and 305 mm) trench widths plus an anchored grate frame and standard cast grates capable of FAA and extended service load capability. The grate frame and grate incorporate a 3-bolt lockdown design firmly securing the grate to the frame. The system is complemented by both In-Line catch basin and 24 x 24 inches (610 x 610 mm) catch basin assemblies. Delete if not required.

* + 1. Product: No. 8 EconoDrain PT-2 Extra Heavy Duty Trench Drain Forming System as manufactured by MultiDrain Systems, including EPS forms grating/cover seat, grating and/or covers and system accessories.
       1. Construction: The trench drain system shall consist of non-CFC Expanded Polystyrene Foam (EPS) interlocking pre-sloped removable forms having a minimum slope of 0.5 percent (1/16 inch per lineal foot of trench) and installed in standard 8 foot (2438 mm) sections, Bolt-In-Place grate rail spacer bars and grate rails anchored securely in concrete, common rebar used for form stability and anti-flotation during pour and gratings.
       2. Expanded Polystyrene Foam (EPS):
          1. EPS shall be non-CFC foam with a flame spread of less than 25 and Smoke Developed rating of less than 450 per ASTM E84 test method.
       3. Grate Seat Rails:
          1. Left and right rail shall be affixed together with Bolt-In-Place rail spacer bars to assure proper symmetry and planar accuracy.

\*\* NOTE TO SPECIFIER \*\* Delete materials not required.

* + - * 1. Material: Mild steel rails. Black, polyester powder coating.
        2. Material: Mild steel rails. Galvanized.
        3. Material: Stainless steel.
        4. Alignment clips shall be provided at the rail end welded to the angle frame.
        5. Eight anchor stands provided per 8 foot (2438 mm) length to aid installation stability; allow simple grade adjustment and provide grate rail pull out resistance. The anchor stands shall be fully welded to the angle frame.
        6. Each rail shall provide a means to mechanically lock itself into the surrounding concrete. Rail pull out resistance shall not be less than 5,526 lb per lineal foot (80 kN per m).
      1. Grate: EG-10162-DIA. 10 x 16 inch (254 x 406 mm) secured to steel rails with center locking device ELD08 or, secured to steel rails with two point shoulder bolt assembly.

\*\* NOTE TO SPECIFIER \*\* Delete material option not required. Uncoated is standard.

* + - * 1. Material: Ductile Iron. Uncoated.
        2. Material: Ductile Iron. Hot dip galvanized.
        3. Open Area: 54 percent.
        4. Load Rating: ASHTO M306. H-20 and HS-25 and FAA AC 150 5320-6D.
      1. Catch Basins:

\*\* NOTE TO SPECIFIER \*\* Delete catch basins not required from the next five paragraphs.

* + - * 1. ECB0824: 8 x 32 x 24 inch (204 x 610 x 610 mm) inline catch basin assembly consisting of EPS former, Bolt-In-Place grate rail spacer bars, grate rail and grate.
        2. ECB2424: 24 x 24 x 24 inch (610 x 610 x 610 mm) catch basin assembly consisting of EPS former, pre-welded grate frame and grate.
        3. ECB2436: 24 x 24 x 36 inch (610 x 610 x 915 mm) catch basin assembly consisting of EPS former, pre-welded grate frame and grate.
        4. ECB2442: 24 x 24 x 42 inch (610 x 610 x 1067 mm) catch basin assembly consisting of EPS former, pre-welded grate frame and grate.
        5. ECB3360: 32.625 x 32.625 x up to 60 inch (828 x 828 x up to 1,524 mm) catch basin assembly consisting of EPS former, pre-welded grate frame and grate.
      1. Form Release: EconoDrain Form Release Part Number RA1G or RA5G.
    1. Product: No. 12 EconoDrain PT-2 Extra Heavy DutyTrench Drain Forming System as manufactured by MultiDrain Systems, including EPS forms grating/cover seat, grating and/or covers and system accessories.
       1. Construction: The trench drain system shall consist of non-CFC Expanded Polystyrene Foam (EPS) interlocking pre-sloped removable forms having a minimum slope of 0.5 percent (1/16 inch per lineal foot of trench) and installed in standard 8 foot (2438 mm) sections, Bolt-In-Place grate rail spacer bars and grate rails anchored securely in concrete, common rebar used for form stability and anti-flotation during pour and gratings.
       2. Expanded Polystyrene Foam (EPS):
          1. EPS shall be non-CFC foam with a flame spread of less than 25 and Smoke Developed rating of less than 450 per ASTM E84 test method.
       3. Grate Seat Rails:
          1. Left and right rail shall be affixed together with Bolt-In-Place rail spacer bars to assure proper symmetry and planar accuracy.

\*\* NOTE TO SPECIFIER \*\* Delete materials not required.

* + - * 1. Material: Mild steel rails. Black, polyester powder coating.
        2. Material: Mild steel rails. Galvanized.
        3. Material: Stainless steel.
        4. Alignment clips shall be provided at the rail end welded to the angle frame.
        5. Eight anchor stands provided per 8 foot (2438 mm) length to aid installation stability; allow simple grade adjustment and provide grate rail pull out resistance. The anchor stands shall be fully welded to the angle frame.
        6. Each rail shall provide a means to mechanically lock itself into the surrounding concrete. Rail pull out resistance shall not be less than 5,526 lb per lineal foot (80 kN per m).
      1. Grate: EG-14162-DIA. 14 x 16 inch (356 x 406 mm) secured to steel rails with center locking device ELD12 or, secured to steel rails with two point shoulder bolt assembly.

\*\* NOTE TO SPECIFIER \*\* Delete material option not required. Uncoated is standard.

* + - * 1. Material: Ductile Iron. Uncoated.
        2. Material: Ductile Iron. Hot dip galvanized.
        3. Open Area: 49 percent
        4. Load Rating: ASHTO M306. H-20 and HS-25 and FAA AC 150 5320-6D.
      1. Catch Basins:

\*\* NOTE TO SPECIFIER \*\* Delete catch basins not required from the next five paragraphs.

* + - * 1. ECB1224: 12 x 32 x 24 inch (305 x 610 x 610 mm) inline catch basin assembly consisting of EPS former, Bolt-In-Place grate rail spacer bars, grate rail and grate.
        2. ECB2424: 24 x 24 x 24 inch (610 x 610 x 610 mm) catch basin assembly consisting of EPS former, pre-welded grate frame and grate.
        3. ECB2436: 24 x 24 x 36 inch (610 x 610 x 915 mm) catch basin assembly consisting of EPS former, pre-welded grate frame and grate.
        4. ECB2442: 24 x 24 x 42 inch (610 x 610 x 1067 mm) catch basin assembly consisting of EPS former, pre-welded grate frame and grate.
        5. ECB3360: 32.625 x 32.625 x up to 60 inch (828 x 828 x up to 1,524 mm) catch basin assembly consisting of EPS former, pre-welded grate frame and grate.
      1. Form Release: EconoDrain Form Release Part Number RA1G or RA5G.
  1. STEEL LINER TRENCH DRAIN SYSTEM

\*\* NOTE TO SPECIFIER \*\* MultiDrain is a versatile pre-engineered steel trench forming/liner system combining the installation and adjustability advantages of our EconoDrain trench forming system. The system includes metal former liners, in galvanized or stainless steel, for trench widths from 8 up to 24 inches (203 up to 610 mm). Our EZ Frame Z-rail grate frame provides quick and easy grade adjustments and frame anchorage into the surrounding concrete. Trench slopes from 0 percent to 1 percent are possible for optimal fluid velocity. MultiDrain installs in a fraction of the time required for conventional form-and-pour systems or pre-cast polymer concrete systems. MultiDrain is a custom, made-to-order product made to fulfill your specific site drainage project requirements at the greatest value.

* + 1. Product: MultiDrain as manufactured by MultiDrain Systems.
       1. Construction: The system consists of metal former liners, grate frame, frame anchorage into the surrounding concrete and grates. Trench depth from 6 to 24 inches (152 mm to 610 mm) maximum, deep with 8 and 12 inches (203 and 305 mm) trench widths and a maximum of 36 inches (914 mm) deep with 18 and 24 inches (457 and 610 mm) trench widths.

\*\* NOTE TO SPECIFIER \*\* Delete trench loading not required.

* + - 1. Trench Loading: Pedestrian.
      2. Trench Loading: H-20.
      3. Trench Width (Nominal): 6 inches (150 mm)

\*\* NOTE TO SPECIFIER \*\* Delete trench width not required.

* + - 1. Trench Width (Nominal): 8 inches (203 mm).
      2. Trench Width (Nominal): 12 inches (305 mm).
      3. Trench Width (Nominal): 18 inches (457 mm).
      4. Trench Width (Nominal): 24 inches (610 mm).
      5. Liner (Channel): Overlapping sections with adjustable slope from 0 percent to 1 percent.

\*\* NOTE TO SPECIFIER \*\* Delete liner material thickness not required.

* + - * 1. Gauge: 16 ga (0.0598 inch) (1.5 mm).
        2. Gauge: 18 ga (0.0478 inch) (1.2 mm).

\*\* NOTE TO SPECIFIER \*\* Delete liner coating not required.

* + - * 1. Coating: 304 Stainless steel. Mill finish.
        2. Coating: 316 Stainless steel. Mill finish.
      1. Grate Frame: Rebar anchor stand for grade adjustment of frame.

\*\* NOTE TO SPECIFIER \*\* Delete grate frame material not required.

* + - * 1. Material: Galvanized steel finish
        2. Material: Ductile iron - hot dipped galvanized finish.
        3. Material: 304 Stainless steel. Mill finish.
        4. Material: 316 Stainless steel. Mill finish.

\*\* NOTE TO SPECIFIER \*\* Select grate from the following seven options and delete all others.

* + - 1. Grate: Cast iron.
      2. Grate: Ductile iron.
      3. Grate: Cast iron grating with coating.
      4. Grate: 304 Stainless steel bar grating with mill finish.
      5. Grate: Galvanized steel bar grate
      6. Grate: Stainless steel bar grating.
      7. Grate: FRP grating.
  1. POLYMER CONCRETE TRENCH DRAINS

\*\* NOTE TO SPECIFIER \*\* Alfa Channel is a modular, pre-cast, pre-engineered polymer concrete (PC) trench drain system that has an interior channel width of 4 inches (102 mm). The system includes 30 sloped channel sections of 3.27 feet (1 m) each with a built-in slope of 0.6 percent. The system also includes 5 additional neutral or non-sloping channels that may be inserted for additional trench length. A variety of gratings and covers provide load capabilities from pedestrian up to large aircraft and severe point loads. The system is complemented by both In-Line catch basin and 12 x 19 inches (305 x 483 mm) modular catch basin assemblies. The modular design of the Alfa Channel system provides true on-site adaptability and cuts down overall project costs by reducing excess materials. Delete if not required.

* + 1. Product: Alfa Channel Trench Drain as manufactured by MultiDrain Systems, including channels, frame, grating and system accessories.
       1. Construction: The system consists of thirty interlocking sloped channels and five non-sloping channels. The non-sloped channels can be inserted at specified intervals in order to extend channel runs. Catch basins, horizontal outlet plates, closed end plates and vertical outlet plate adapters shall be installed at designated locations. Closed end plates terminate channel runs.

\*\* NOTE TO SPECIFIER \*\* Delete type not required.

* + - 1. Type: Channel with frame and grate.
      2. Type: Channel with in-lay grate.

\*\* NOTE TO SPECIFIER \*\* If corrosive products will be transported with this system, change polyester to vinylester and add compatible sealant.

* + - 1. Drain Trench: Fabricated of polyester polymer concrete, 6.1 inches (155 mm) wide, 4 inches (102 mm ) ID with radius bottom, having the following attributes:
         1. Length: Nominal 19.6 inches (0.06 meter) and 39.19 inches (1.0 meter).
         2. Bottoms: Sloped to provide 0.6 percent slope.
         3. Anchoring Ribs: Full length.
         4. Grate Locking Slots: Blind, vibration damping, thermoplastic.
         5. Interlocking ends.
         6. Maximum of 294 feet (90 m), continuous slope using sidewall extensions.

\*\* NOTE TO SPECIFIER \*\* Select grate type and accessories verifying loading requirement capacity with manufacture's literature. Use cast iron frames for hard tire loadings. Delete items not used.

* + - 1. Grate: Perforated heel-proof steel.
      2. Grate: Slotted steel.
      3. Grate: Ductile Iron anchor frame.
      4. Grate: Grey iron anchor frames.
      5. Grate: Fiberglass.
      6. Accessories:
         1. End plates.
         2. Outlet plates.
         3. Strainer.
         4. Locking devices.
         5. Sealant.
         6. Installation devices.
      7. Catch Basins:
         1. Top section.
         2. Bottom section. 4 inch (102 mm) round knock outs each side.
         3. Ductile iron frame.
         4. Ductile iron grate.

\*\* NOTE TO SPECIFIER \*\* Delete optional accessories not required.

* + - * 1. Galvanized trash bucket.
        2. Stainless steel trash bucket.
        3. Solid steel cover.

1. EXECUTION
   1. EXAMINATION
      1. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.
   2. PREPARATION
      1. Overall concrete thickness and reinforcement steel shall be per Structural Engineer's specification for the application and service loading.
      2. Clean surfaces thoroughly prior to installation.
      3. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.
   3. INSTALLATION
      1. Install trench drain in accordance with manufacturer's instructions.
      2. EPS Formers shall be coated with pigmented Form Release sufficiently ahead of installation to allow the form release to dry.
      3. Provide bracing to assure alignment and stability of formwork during concreting operations.
   4. PROTECTION
      1. Protect installed products until completion of project.
      2. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION