

## **SECTION 33 46 00 – Subdrainage**

### **PART 1 – GENERAL**

#### **1.1 General Provisions**

- A. The Conditions of the Contract and all Sections of Division 1 are hereby made a part of this Section.

#### **1.2 Description of Work**

##### A. Work Included:

1. Prepare trench bottom to have continuous contact with pipe at specified elevation as shown in plans. Ensure trench is sloped as specified in plans to flow toward outlet.
2. Provide EZ Flow product and install beginning at the low-point and work upstream using internal coupling to connect EZ Flow.
3. Provide and install specified fill material over EZ Flow pipe.
4. Provide and install grass, or other cover medium, by using method per plans.
5. Supplying all labor, equipment, materials and apparatus not specifically mentioned herein or noted on the plans, but which are incidental and required to complete the work specified.

##### B. Related Work:

1. Subgrade preparation under Section 31 20 002 Earth Moving.
2. Subsurface drainage materials - Section 33 40 00 Storm Drainage Utilities, when needed
3. Irrigation installation - Section 32 80 00 Irrigation, when needed.

#### **1.3 Quality Assurance**

- A. Follow Section 01 33 00 Submittal Procedures requirements.
- B. Submit manufacturers data as required by specifications.
- C. Installation: Performed only by skilled workpeople with satisfactory record of performance on landscaping or drainage projects of comparable size and quality.

#### **1.4 Delivery, Storage, and Handling**

- A. Protect EZ Flow Pipe sections from damage during delivery and store under tarp to protect from sunlight, when time from delivery to installation exceeds one week.

#### **1.5 Project Conditions**

- A. Review installation procedures and coordinate EZ Flow work with other work affected. Generally, EZ Flow will be installed concurrent with other site drainage.
- B. Cold weather:

1. Do not use frozen materials or materials mixed or coated with ice or frost if in an area needing compaction or required to support load.
- C. Protect partially completed EZ Flow installations against damage from other construction traffic when work is in progress.

## PART 2 – PRODUCTS

### 2.1 Availability

- A. NDS, Inc., 851 North Harvard Avenue, PO Box 339, Lindsay, California 93247. Toll Free (800) 726-1994. Toll Free Fax (800) 726-1998. Phone (559) 562-9888. Fax (559) 562-4488. Website: www.ndspro.com. E-Mail nds@ndspro.com.

### 2.2 Materials

A. EZ Flow Pipe

1. Pipe shall be manufactured from High Density Polyethylene and shall be both corrugated and perforated.
2. EZ Flow shall have Expanded Polystyrene Aggregate surrounding the pipe and enclosed by fabric mesh.
3. Expanded Polystyrene aggregate must be made from 100% Recycled Polyethylene.
4. Expanded Polystyrene aggregate shall have a measured void space of 57%
5. EZ Flow sections must be provided in 10 foot sections
6. Internal couplings shall be used to connect EZ Flow sections.

| Part Number | Part Description     | Diameter | Flow Rate    | Length |
|-------------|----------------------|----------|--------------|--------|
| EZ-0701F    | EZ Flow with 3" Pipe | 7"       | 80.8 gpm/ft  | 10'    |
| EZ-0701A    | EZ Flow without Pipe | 7"       | 37.1 gpm/ft  | 10'    |
| EZ-1001F    | EZ Flow with 4" Pipe | 10"      | 130.9 gpm/ft | 10'    |
| EZ-1001A    | EZ Flow without Pipe | 10"      | 75.7 gpm/ft  | 10'    |
| EZ-1501F    | EZ Flow with 6" Pipe | 15"      | 345.0 gpm/ft | 10'    |
| EZ-1501A    | EZ Flow without Pipe | 15"      | 170.3 gpm/ft | 10'    |
| 3C05        | 3" Internal Coupling | 7"       | n/a          | n/a    |
| 4C07        | 4" Internal Coupling | 10"      | n/a          | n/a    |
| 6C09        | 6" Internal Coupling | 15"      | n/a          | n/a    |

B. Soil

1. Obtain specified fill material as backfill over EZ Flow drain pipe.

## **PART 3 – EXECUTION**

### **3.1 Inspection**

- A. Examine excavated trench for smoothness and ensure trench is free of debris. Inspect trench for correct slope and elevation in accordance with plans. Do not start EZ Flow installation until unsatisfactory conditions are corrected.
- B. Inspect EZ Flow product to ensure product has not been damaged during delivery. Inspect interior of pipe for debris, soil or other foreign objects, if found remove before installation.
- C. Installation constitutes acceptance of existing conditions and responsibility for satisfactory performance. If existing conditions are found unsatisfactory, contact Quality Control Manager for resolution.

### **3.2 Preparation**

- A. Excavate trench as specified in plans to desired width accommodating the EZ Flow pipe system.
- B. Slope trench as specified in plans to flow toward outlet(s).
- C. Prepare and shape smooth trench bottom to have continuous contact with pipe at specified elevation as shown in plans.

### **3.3 Installation of EZ Flow drainage system**

- A. Provide EZ Flow product and install beginning at the outlet point and work upstream.
- B. Use internal couplings provided by NDS to connect EZ Flow sections together.
- C. To cut EZ Flow pipe to lengths other than ten foot intervals, mark the mesh where cut needs to be made and carefully make a cross-sectional cut in the mesh to access Polystyrene Aggregate. Remove and set aside sufficient aggregate to expose the pipe and to re-connect the mesh to the pipe. Using an appropriate connector such as a nylon wire tie, reattach the mesh to the pipe, making sure remaining aggregate is properly contained. Cut the exposed polyethylene pipe to the measured length. Dispose of remaining aggregate properly.
- D. At the end of the work day all upstream open ends of EZ Flow shall be covered or plugged to prevent intrusion of dirt, debris and foreign objects.
- E. Connection to onsite storm drain systems and structures shall be considered incidental to the completion of this specification section.
- F. Provide and install specified fill material over EZ Flow pipe. Lift thickness and compaction density shall be in accordance with plans and specifications. Areas subject to H-25 traffic loading shall maintain 1' – 0" minimum cover to final subgrade elevation. Areas subject to construction traffic shall maintain 1' – 6" minimum cover while subject to construction traffic loading.
- G. Install surface medium as specified in plans.

**END OF SECTION 33 46 00**