SECTION 02711

FOUNDATION DRAINAGE

PART 1 - GENERAL

1.1 SUMMARY:

A. Section Includes:

1. Foundation drainage systems.

B. It is the University’s intention not to utilize pumping systems to convey foundation drainage whenever possible.

C. Related Sections:

1. Section 01400 - Quality Control.
2. Section 02200 – Earthwork.
3. Section 02221 – Trenching, Backfilling, Compacting
4. Foundation Waterproofing Sections of Division 7

1.2 SUBMITTALS:

A. Certification:

1. Submit six (6) copies of certification signed by Contractor and foundation drainage system Installer indicating that installed materials conform to specified requirements and system was successfully checked and tested prior to covering.

PART 2 - PRODUCTS

2.1 MATERIALS:

A. Pipe: PVC, perforated or plain, complying with ASTM D2729. Furnish drainage pipe complete with bends, reducers, adapters, couplings, collars, and joint materials. Envelope pipe in continuous filter fabric sock. ADS pipe is not acceptable for foundation drainage or landscaping underdrainage.

B. Drainage Fill: Placed to a minimum depth of 4” below pipe and 12” above the pipe. Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, reasonably uniform size, with maximum size of 1-1/2”, 10% retained on #4 sieve and not more than 2% passing a No. 200 sieve as acceptable to the Soils Engineer. This Aggregate shall meet the gradation requirements of ASTM C-33, No. 67 aggregate.
C. Filter Fabric: Mirafi 140N or approved substitute polypropylene fabric weighing not less than 4 oz. per sq. yd. for wrapping of drainage fill.

D. All-In-One Systems: No foam “All-in-one” foundation drainage systems shall be allowed, including but not limited to EZ Flow Systems.

E. Other Materials: As required by detailing and Soils Engineer’s recommendations.

PART 3 - EXECUTION

3.1 INSTALLATION:

A. Do not backfill any foundation drainage systems until inspected by the Owner.

B. No cleanouts shall be utilized unless approved by University Engineer.

C. After concrete foundations have been cured and forms removed, grade perimeter drain trenching to required levels and slopes.

D. Line bottom and sides of trench with filter fabric with single width extended up sides of trench to permit full lap when folded over top of drainage fill.

E. Place a supporting layer of drainage fill material on filter fabric over compacted subgrade where drainage pipe is to be laid to the depth indicated or, if not indicated, to a compacted depth of not less than 6-inches.

F. Lay drainpipe solidly bedded in drainage fill material.

G. Provide full bearing for each pipe section throughout its length, to true grades and alignment, and continuous slope in the direction of flow.

H. Lay perforated pipe with perforations down and joints tightly closed in accordance with pipe manufacturer’s recommendations.

I. Provide collars and couplings as required.

J. Place drainage fill over drain lines after satisfactory testing. Completely cover drain lines to a width of at least 6-inches on each side and 12-inches above top of pipe, unless more coverage is indicated on the drawings. Place fill material in layers not exceeding 3-inches in loose depth and compact each layer placed.

K. Fold filter fabric over top of drainage fill with full lap.

L. No storm conveyance systems shall be connected to the foundation drainage system, including but not limited to: tree and planter drains, roof drains, curb inlets, catch basins, etc., unless authorized by the University Engineer.
M. Groundwater sumps residing in elevator shafts must be protected from any water generated in the elevator shaft. Groundwater sumps are not to be used or considered as elevator emergency drain pump.

3.2 FIELD QUALITY CONTROL:

A. Do not cover pipe until it has been inspected.

B. Testing Drain Lines: Test or check lines before backfilling to assure free flow. Remove obstructions, replace damaged components, and retest system until satisfactory. Coordinate with the University of Colorado at Boulder Utility Engineer.

C. No cleanouts shall be utilized unless approved by a University Engineer.

END OF SECTION 02711