

## SECTION 7

### UNDERDRAIN SERVICE

#### ARTICLE I

#### USE OF THE PUBLIC UNDERDRAIN SYSTEM

\*6 7.100 The purpose of the District's underdrain system is to provide a method for conveying ground water from around building foundations via gravity to an acceptable discharge point in a drainage channel. All new developments within the District shall install gravity underdrain systems. A building foundation underdrain shall be installed for all structures. All foundation underdrains, whether inside or outside the foundation walls, shall be connected by gravity to the District's underdrain system via an underdrain service line.

\*2 All owner-developers are responsible for establishing the elevation of the point of connection of the service line before setting building elevations.

\*6 The underdrain service line shall be installed and constructed in accordance with the District's specifications and shall meet the following minimum District requirements:

A. All underdrain service lines must be 3 inch solid PVC. Color of pipe must be different from the sanitary sewer lines.

\*7 B. All underdrain service lines must be provided with a 3" cleanout within 5 feet of the foundation wall to identify clearly the location of the underdrain service line and to facilitate cleaning. The clean-out must extend to the ground surface and be provided with a water tight cover.

C. All underdrain service lines must be accessible by the property owner from inside the building foundation area.

All Owner-Developers within the City and County of Denver must also comply with the underdrain requirements of Wastewater Management District.

\*6 7.101 A design for each structure's foundation drain and the connection of the service line to the District's underdrain main system must be submitted to the District prior to the issuance of an underdrain tap permit. The design of the building foundation underdrain and service line connection must show the following minimum data:

\*6 A. Location of the foundation drains relative to the footings both horizontally and vertically and the slope of all lines, including the service line which must have a uniform slope of at least 1% from the sump pit to the tap on the main.

- B. The type of pipe material to be used.
- C. The type and cross section of bedding.
- \*7 D. The location of the sump pit(s) and their orientation to the service line connection. All service lines must connect to a sump pit.
- \*2 E. If both inside and outside foundation drains are used, a gravity connection to the service line must be installed for both. The design must be such that the higher system does not flow into the lower system.

\*2 7.102 UNDERDRAIN VARIANCES: The District will consider variances from its underdrain requirements on a case by case basis. The impact on other property and improvements within the district will be one of the considerations in granting or denying any variance for a development. The impact on the structure will be a further consideration in granting or denying a variance for an individual structure. The District reserves the right to waive any and all of these requirements.

COMMERCIAL AND MULTI-FAMILY USE: Underdrain variances will be considered for commercial and multifamily developments which provide adequate technical information to indicate: 1) that underdrain systems are not necessary for the type of construction proposed; 2) that no portion of the building which is being proposed has any subsurface construction (other than normal foundation systems); and 3) the grading is such that proposed building construction is a minimum of five (5) feet above existing groundwater. Variances must be obtained prior to any construction starting on a structure within the development.

SINGLE FAMILY RESIDENTIAL USE: Variances for single family residential developments shall be considered on a lot by lot basis, and only if adequate technical information is provided to indicate that the structure's foundation/underdrain cannot physically be connected to the development's underdrain system by gravity and that an adequate alternative solution for eliminating groundwater from around the building foundations is available. Variances must be obtained prior to any construction starting on a residential structure. If construction has started, use of the structure's sewer tap will not be permitted until a variance for the underdrain has been obtained.

\*2 Any request for a variance from the District's underdrain requirements must be submitted in writing to the District's Engineer along with the technical documentation and other information to support the request as indicated above. Such information shall include the following:

- \*6 A. A written request by the property owner, the signatory party on the main extension application for a development or the signatory party on the sewer tap permit for an individual structure.

\*7 B. A signed Request for Underdrain Variance (See Exhibit N or N.1) and one, signed original Underdrain Variance Agreement (See Exhibit L, L.1, L.2 or L.3).

\*3 C. A site grading plan which shows the following items:

1. Existing and proposed grading.
2. Boring locations and identifiers.
3. Location of all structures with lowest level finish floor (F.F.) elevation.
4. Foundation detail showing F.F. location on typical section.

\*3 D. A letter from the geotechnical engineer stating that foundation drains are not required or a letter explaining why the structure's foundation underdrain cannot be connected by gravity to the District's underdrain system with a **recommendation** for an adequate alternative solution for eliminating groundwater from the building foundation.

\*3 E. A complete copy, including narrative, of boring logs and a boring location plan of the geotechnical report, if undertaken for the structure.

\*3 F. For single family residential variances, payment of the District's current fee for underdrain variances.

\*6 G. Requested variances are subject to review by an independent geotechnical firm under contract with the District for concurrence with these recommendations. The recommendation of the engineer does not constitute a guarantee of the design.

\*6 Sump pumps will be considered as an alternative solution to eliminating groundwater from building foundations. The point of discharge for the sump pump must be at the underdrain service line connection.

\*6 **SUMP PUMPS WHICH DISCHARGE TO THE GROUND SURFACE VIOLATE THE DISTRICT'S RULES AND REGULATIONS AND ARE STRICTLY PROHIBITED.**

\*3 & \*7 The Underdrain Variance Agreements will be approved by the District upon recommendation of the District's Engineer and Manager for approval. The Underdrain Variance Agreement requires the builder-developer to indemnify the District from all claims and demands or liability arising out of or encountered in connection with an underdrain system not being installed for the development or structure. Variances will be recorded by the District in order for the current or future owner of the structure to be made aware of the underdrain variance and the liabilities arising out of the structure not being connected by gravity to the District's underdrain system.

- \*7 7.103 The inspection fee for connections to an underdrain main will be as provided on the District's underdrain tap application per inspection, which fee may be amended from time to time by the Board. No work shall start until all District fees have been paid. The District will visually verify that the underdrain as constructed in the field agrees with the design submitted with the tap application, including location and size of pipelines, low points, gravel bedding and other items as shown on the approved plans.
- \*6 All requests for inspections must be received at the District Engineer's office by 12' o'clock noon each day and must be at least 24 hours in advance of the requested inspection time. No inspections will be done on weekends or holidays.
- \*6 The owner-developer must provide the following items for inspection:
- \*7 A. A water supply to flow test the underdrain service line and plugs for the foundation drain feeder lines.
- \*7 B. A person to verify the elevations of the foundation drain versus the design submitted with the application. Verification will be made at all corners and at a maximum distance of 20 feet between points. The top of the foundation wall may be used as a reference. A copy of the measurements will be provided to the District staff at the site.
- \*7 If either of the above items are not available when the District's field representative arrives to witness the verification, the verification will be canceled and a re-verification fee will be required prior to re-scheduling.
- \*6 All foundation underdrains will be verified against the designs submitted with the permit applications. All sumps will be flow tested with water and dye to verify a gravity connection has been made to the District's system. The owner-developer and installer will be provided with a report at the time of the verification. The report will indicate whether the installation has passed or failed the verification. Any deviations of the installation from the permit plans will be cause for rejection of the installation and a failed verification report will be issued.
- \*6 Any foundation underdrain system failing the verification will require a re-verification fee to be paid. A re-verification will not be scheduled until the fee is paid. In addition, if a re-verification is required because the installation deviated from the permit plans, the re-verification will not be scheduled until revised plans, sealed by the designing engineer, have been submitted to the District Engineer
- \*3 7.104 All cost and expense incident to the installation and connection of the underdrain service will be borne by the owner-developer. The owner-developer shall indemnify the Board for any loss or damage that may directly or indirectly be occasioned by the installation of the underdrain service, including but not limited to, any sump pump that may have been installed for the foundation underdrain as a result of the foundation underdrain being installed improperly to flow by gravity to the District's underdrain main system.

- 7.105 The owners of all structures will be responsible for repair and upkeep of their foundation underdrain lines and sump pumps, if any, and the underdrain service lines from the main to the structures.
- 7.106 Underdrain service charges are billed by the District in accordance with Article 8 of this Section.
- \*3 & \*7 7.107 Only groundwater may be discharged into the underdrain system. No person(s) shall make connection of sources of surface runoff to an underdrain or building drain which in turn is connected directly or indirectly to an underdrain system. No person shall discharge or cause to be discharged any storm water, surface water, roof runoff, cooling water, domestic or industrial wastewater, or industrial process waters of any kind to the underdrain system. No person shall contribute or cause to be contributed, directly or indirectly, any pollutant or wastewater to the underdrain system.
- 7.108 If the physical condition or operation of the District's sewer line(s), water line(s) or other District property, is interfered with or endangered, or constitutes a risk to the health and safety of the public as a result of a person's use of the District's underdrain system as described in 7.107 above, then in that event, and only in that event, the District shall have the right, at the violator's expense, to do whatever is reasonable and necessary under the circumstances to correct such violation.
- \*6 7.109 No person shall break, damage, destroy, uncover, deface or tamper with any structure, appurtenance or equipment which is a part of the underdrain system.
- \*6 7.110 Any contractor, developer, or other person who violates any provision of Sections 7.107, 7.108, or 7.109 may be fined the greater of \$500 a day or the cost of remediation.
- 7.111 When required by the District or any other applicable entity, the owner of any property serviced by a building underdrain carrying groundwater shall install a suitable control manhole together with such necessary appurtenances in the building underdrain line to facilitate observation, sampling and measurement of any contamination to the groundwater. Such manhole, when required, will be accessibly and safely located, and will be constructed in accordance with plans approved by the District Engineer. The manhole must be installed by the owner at his expense, and must be maintained by him so as to be safe and accessible at all times.
- 7.112 All measurements, tests and analyses of the characteristics of the groundwater to which reference is made in these Rules and Regulations will be determined in accordance with the latest edition of "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and will be determined at the control manhole provided, or upon suitable samples taken at said control manhole. In the event that no special manhole has been required, the control manhole will be considered to be the nearest downstream manhole in the public underdrain main to the point at which the building

underdrain is connected. Sampling will be carried out by customarily accepted methods to reflect the effect of constituents upon the underdrain system and to determine the existence of hazards to life, limb and property. (The particular analyses involved will determine whether a 24-hour composite of all outfalls of premises is appropriate or whether a grab sample or samples should be taken. Normally, but not always, BOD and suspended solids analyses are obtained from 24-hour composites of all outfalls, whereas pH's are determined from periodic grab samples.) The District or other applicable agency may invoke fines in accordance with District rules, state or Federal regulation, for any violation of these rules and regulations.

- \*6 7.113 Any structure constructed prior to 1995 shall be exempted from installing a building underdrain. No Variance Request shall be required.

## **ARTICLE II**

### **PROCEDURES FOR APPLICATION FOR PURCHASE OF UNDERDRAIN TAP PERMITS**

- 7.200 Applications for an underdrain tap permit are available from the District Manager or the District Engineer (See Exhibit G).
- 7.201 Applications for underdrain service will be filled out as follows:
- A. **SUBDIVISION NAME:** The name of the Subdivision will be provided.
  - B. **BLOCK AND LOT NUMBER:** The block and lot number will be provided. Where a block and lot number are not available, the entire legal description for the property shall be attached to the application.
  - C. **APPLICANT NAME, ADDRESS AND PHONE NUMBER:** The name, address and phone number of the owner-developer of the property at the time the application for underdrain service is being submitted will be provided.
  - D. **DISTRICT PERMIT APPLICATION FEE AND INSPECTION FEE:** The District Manager will indicate on the application the underdrain tap application fee and the inspection fee required.
  - E. **TOTAL PAYMENT AND SIGNATURES:** Upon receipt of payment for the underdrain application fee and inspection fees, which will be indicated on the line provided, the District Manager and the owner-developer or their designated representatives will sign and date the application.
- 7.202 The District reserves the right to revoke any application previously granted before service has been provided if any of the conditions listed in Article 7.203 below have occurred. Such

application will be retained along with fees paid to the District. If the applicant requests a refund, the Board at its discretion may cancel the application and refund fees paid without interest, within one year. Applications will become void if not used within two years.

- 7.203 The District reserves the right to deny application for underdrain service for any objective reason.

### **ARTICLE III**

#### **SERVICE LINE STUB-INS**

- 7.300 Service line stub-ins may be permitted from the main past the curb for underdrain service, provided the owner-developer or contractor either applies for the stub-ins with the Application and Agreement for Extension of Mains or makes a separate application for stub-ins prior to the time of building and connecting to an existing underdrain main.
- 7.301 If service line stub-ins are connected to an underdrain main at the time the main is constructed, additional inspection fees will not be charged. The owner-developer will be charged for inspection fees as required by the Application and Agreement for Extension of Mains. If a request is made for a service line stub-in to an existing underdrain main, the owner-developer must complete the District's Agreement for Underdrain Stub-In Permit (See Exhibit H) and pay the District's current stub-in permit and inspection fee.
- 7.302 Upon completion of the stub-in permit application and payment of the fees by the owner-developer, the District Manager will approve and issue the permit for stub-in purposes only.
- 7.303 Upon request for connection of the service line to the building from the stub-in, the owner-developer or contractor must make an application for an underdrain tap permit and pay the District's then existing tap application fee.

### **ARTICLE IV**

#### **UNDERDRAIN TAP INSPECTIONS**

- \*6 7.400 The District Engineer will inspect all underdrain taps including stub-ins to the District's underdrain mains during construction. The District has constructed an underdrain collection system throughout the District which consists of a mainline system of 6-inch PVC pipe. Underdrain service lines may only be connected to this system in the presence of the District Engineer's field representatives. All underdrain pipes exiting from building property lines must be a 3-inch diameter pipe. This is to minimize the chances that a contractor will inadvertently connect the underdrain system to the sanitary sewer or the sanitary sewer to the underdrain system.

All requests for inspections must be received at the District Engineer's office by 12' o'clock noon each day and must be at least 24 hours in advance of the requested inspection time. No inspections will be done on weekends or holidays.

7.401 No work shall be backfilled until construction has been inspected and accepted by the District's Engineer.

\*6 7.402 Inspection shall not constitute a guarantee of the contractor's work.

## ARTICLE V

### UNAUTHORIZED TAPS \*2 OR FAILURE TO CONNECT TO AN UNDERDRAIN

7.500 Any contractor, developer, or other person who makes or causes to be made a tap on the underdrain mains of the District without first obtaining written permission from the District may be fined \$500.00 per day until an application for underdrain tap permit has been submitted and approved and all fees and fines have been paid.

\*2 7.501 The District has developed an underdrain main system to provide a gravity connection from the foundation/underdrain of each structure within the district to the District's underdrain mains via an underdrain service line. \*6 In accordance with Section 4.201, the District may discontinue water service to any structure for which the owner, developer or contractor fails to install or connect a foundation/underdrain to the District's underdrain system, or installs a sump pump, without a variance agreement.

\*7 7.502 The District shall give thirty days written notice to correct any violations of this article. Fines may be imposed thirty days after issuance by the District of the written notice to correct the violation.

## ARTICLE VI

### RESIDENTIAL

\*7 7.600 Separate and independent underdrain service lines will be provided for every single-family detached dwelling unit unless a variance from this requirement has been granted by the District's Board of Directors. Each multiple-unit structure shall have a separate underdrain service line and tap for each building, unless a variance from this requirement has been granted by the District's Board of Directors.

7.601 All of the District's rules and regulations for underdrains applicable to single-family residences shall apply to apartments, condominiums, single-family attached dwellings and townhouses constructed in the District.



## **ARTICLE VII**

### **NON-RESIDENTIAL**

- 7.700 The number and size of underdrain service lines required to serve non-residential buildings will be as reviewed and approved by the District Engineer.
- 7.701 All other rules and regulations for the installation of service lines in the District will be applicable to the installation of underdrain service lines to serve non-residential buildings.

## **ARTICLE VIII**

### **ANNUAL UNDERDRAIN SERVICE FEES**

- 7.800 The number and size of underdrain service lines required to serve non-residential buildings will be as reviewed and approved by the District Engineer.
- \*8 7.801 In February of each year, the District will bill for all types of underdrain service concurrently with the District's invoice for sewer service fees. Payment of underdrain service fees is due in accordance with the terms set forth for payment of the District's sewer service fees in Section 6, Article X of these Rules & Regulations.
- \*8 7.802 The District's underdrain service fees are based on the rates established by the District's Board. The District's annual underdrain service fees will be charged to all residential and non-residential units served by an underdrain service tap.
- 7.803 Service is presumed to be activated as of the date the underdrain tap fee is paid for the structure or premises.
- \*8 7.804 All requests for transfer, termination or reactivation of District underdrain service must be made in writing. The District's Utility Transfer Form (see Exhibit O) or Billing Information Change Request Form (see Exhibit O.1) must be used for all transfer requests and the District's Utility Transfer Fee must be paid.

Notwithstanding the requirements for written notification, the current owner of a property will be liable for all charges imposed by the District on the property to which services are provided from the date such charges become due until such charges are paid and such charges will be a lien on the property served.

## ARTICLE IX <sup>\*1</sup>

### UNDERDRAIN MAINTENANCE PLAN

- 7.900 Introduction - This plan is a written summary of the operation and maintenance of the Grant Water & Sanitation District's underdrain system. The primary system was designed and constructed by the Bowles Metropolitan District, with subsidiary systems serving individual developments designed and constructed by the developers thereof and inspected in accordance with the Rules and Regulations published by the Grant Water & Sanitation District. The purpose of this underdrain system is to provide a gravity foundation drainage system for all structures located within the Grant Water & Sanitation District.

The main collection lines of the system are located in the street right-of-way and within the sanitary sewer system easements. The main collection lines of the underdrain system must be maintained by the entity which constructed them for the first year after conditional acceptance. At the end of the one year period, the District will inspect the main collection lines of the underdrain system and request that repairs, if necessary, be made to bring the system into compliance with the Grant Water & Sanitation District Rules and Regulations. The main collection lines of the underdrain system will then be deeded to the Grant Water & Sanitation District for its ownership and maintenance in perpetuity. Individual lot owners will own and be responsible for maintaining the service lines connecting their property to the District underdrain system as well as foundation drains and any other underdrain facilities located on their property.

- 7.901 Cleaning - The underdrain system will be cleaned at regular intervals as determined by the amount of debris observed in cleanouts and underdrain manholes throughout the District. It is anticipated that during the initial phase of construction of this system within the Grant District, cleaning on an annual or biannual basis will be necessary. Once the majority of construction has been completed, it is anticipated that this system will be cleaned less frequently, but no less than every five (5) years. Inspections will be done on a quarterly basis throughout the District in a random manner to determine whether or not silts, sands or other debris has entered into the system. When debris is discovered, areas will be scheduled for cleaning or if in the opinion of the District, the debris could present a problem to the proper operation of the system, a special cleaning will be scheduled immediately.
- 7.902 Water Quality Monitoring - At the points of discharge into surface water, water quality will be monitored. Water quality testing will include testing for evidence of pollution. Water quality testing prior to the connection of any residences to the area has been undertaken to establish a baseline for determining whether or not contamination has occurred.

The District has the ability to isolate portions of the system should contamination be discovered and has the authority, 1) to investigate such contamination; 2) take corrective actions; and 3) to charge parties responsible for contamination should they be identified.

7.903 Water Quantity Monitoring - Throughout the year, the discharge points will be monitored and visually observed for the quantity of water which is being discharged and on a random basis, flow measurements will be taken during the high groundwater months to determine the quantity of discharge.