Grading and Drainage Plan Design Requirements

Per Unified Development Code Chapter 350-601 & 605

A Grading and Drainage Plan is required for all developments that meet any of the following criteria:

- The entire development, or a portion thereof, lies within a FEMA special or flood hazard area or other flood hazard areas as determined by the DAC Flood Commission
- Grades within the area to be developed in excess of 4%
- A major arroyo, stream, or channel exists within the area to be developed. (As determined by the DAC Flood Commission)

A Grading and Drainage Plan shall include a topographic and boundary survey and grading plan, prepared and certified by a New Mexico Registered Profession Engineer, with elevation contours shown at not more than two-foot intervals on slopes up to 30% and five-foot intervals on slopes greater than 30% that shows:

- Contour mapping shall extend a minimum of 500 feet beyond the development boundaries
- Location and finished floor elevation (FFE) of all existing structures
- All areas with slopes 0% to 20%, 21% to 30%, and 31% and greater, differentiated through shading, tone, color or line weight, as well as vertical and horizontal data
- A permanent benchmark noted on the plan and approved by the Engineer Services Department shall be used in determining the location of improvements within the development. Both horizontal and vertical datum are required. A tie to a section corner or other known, accepted and approved monuments are required.
- All areas to be graded on the site and the final contours to be achieved by the grading.
- All finished floor or grade elevations.
- The location of temporary erosion structures and methods used, including staging and stockpile areas, unless an erosion control plan is included within submittal.
- All pertinent drainage information, including but not limited to drainage flow arrows, flow rates, volumes, proposed inflow and outflow points for runoff from the study area showing both the pre- and post-development conditions.
- Descriptions to include all pertinent information (e.g., size, slope, material, etc.) of existing irrigation and drainage facilities and structures shall be submitted, such as ditches, drainageways, gutters and culverts and shall include all pertinent information such as size, slope and material
- FEMA flood hazard areas and FIRM information.

- One hundred twenty-five percent (125%) of the differential runoff between predevelopment and post-development conditions shall be retained/detained in ponding areas. Sizing and other design requirements of the ponding areas include:

    - Required pond size can be calculated from the formula below:

$$\textbf{Total Impervious Area } (\textbf{Sq. Ft}) \times \left(\frac{\textbf{Runoff Coefficient}}{\textbf{12}}\right) \times \textbf{1.25} = \textbf{Total Required Storage } (\textbf{Cu. Ft.})$$

**Runoff Coefficients: 2.0 for Mesa Areas (Land Slopes ≥ 1%)
2.8 for Valley Areas (Land Slopes ≤ 1%)

Other Design Requirements for on lot ponding include:

- Planning and design of pond dimensions/locations shall be such that flooding problems are not transferred beyond the property's boundaries.
- The pond shall be located in a low lying portion of the property dictated by on site topography
- The pond shall be located a minimum of five (5) feet from adjacent property lines and ten (10) feet from any structures
- The pond shall not be placed inside easements that are intended for uses other than drainage.
- The minimum depth of the pond shall be 18 inches
- Secure fencing shall be required if the depth of the pond exceeds three (3) feet
- The side slopes (rounded to the nearest whole number) shall be treated with the applications found in Table 6.16 below.

Table 6.16 Treatment Applications for Ponding Areas

Side Slope	Typical Treatment Required or Other Acceptable Applications
Side slope 2:1	Grouted rock, concrete, or wire-tied rip-rap
2:1 < Side Slope < 3:1	Hand placed rip-rap
Side Slope < 3:1	Permanent best management practices, (i.e vegetation, landscape rock, etc.)

** Maintenance of the on-lot pond is the responsibility of the property owner(s)

**Hand drawn site plans as part of a building permit submittal are no longer accepted by this office. Plans & all details must all be printed and hand delivered to the Flood Commission or sent digitally via email.