

## GRANTSVILLE CITY PLANNING COMMISSION

### NOTICE OF DISCUSSION AND PUBLIC HEARING ON PROPOSAL TO ADOPT A RETAINING WALL ORDINANCE FOR THE GRANTSVILLE CITY LAND USE MANAGEMENT AND DEVELOPMENT CODE.

Pursuant to the provisions of Section §10-9A-205 and §10-9a-502 of the Utah Code. Notice is hereby given that the Grantsville Planning Commission will hold a discussion and public hearing on May 19, 2022 at 7:00 p.m. at Grantsville City Hall. The meeting will also be broadcast on Zoom. The discussion and public hearing is to discuss and to receive public input and consider action to adopt a Retaining Wall Ordinance for the Grantsville City Land Use Management and Development Code and make a recommendation to the City Council. Documentation associated with this hearing and consideration may be requested through email. All comments and concerns need to be sent in writing through email or mail and received no later than 5:00 p.m. May 19, 2022.

Dated this 6th day of May, 2022.

**BY ORDER OF THE GRANTSVILLE  
PLANNING COMMISSION**

Kristy Clark  
Zoning Administrator  
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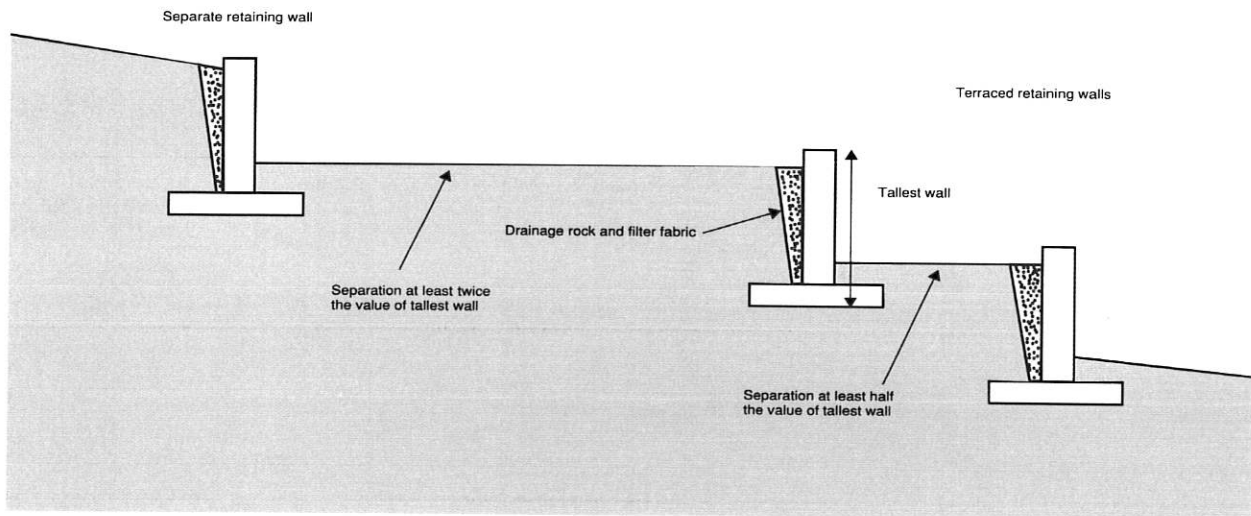
## RETAINING WALLS:

- A. Applicability: This section applies to all "Retaining Walls", as defined in chapter 2 of the Land Use Ordinance Code. **Currently no definition in the land use ordinance. "Retaining Wall": A wall that is built to keep the land (soil) behind it from sliding or moving.**
- B. Building Permit Required: Except as otherwise provided in subsections C of this section, all retaining walls require a building permit prior to construction or alteration. Permit applications shall be processed and issued in accordance with building permit procedures and applicable provisions of this section. Building permit review fees will be assessed and collected at the time the permit is issued.
- C. Building Permit Exemptions: The following do not require a building permit:
  - 1. Retaining walls less than four feet (4') in height with less than ten horizontal units to one vertical unit (10H:1V) front and back slopes within ten feet (10') of the wall;
  - 2. Nontiered retaining walls less than three feet (3') in height with back slopes flatter than or equal to two horizontal units to one vertical unit (2H:1V) and having front slopes no steeper than or equal to four horizontal units to one vertical (4H:1V);
  - 3. Tiered retaining walls less than three (3') in height per wall and which have front slopes and back slopes of each wall no steeper than or equal to ten horizontal units to one vertical unit (10H:1V) within ten feet (10') of the walls;
  - 4. Retaining walls less than one foot (1') in height with a fence less than six feet (6') attached to the top of it; and
  - 5. Retaining walls less than fifty (50) square feet in size.
- D. Geologic hazard: Global stability analysis of modified natural slopes steeper than three horizontal units to one vertical unit (3H:1V) and cut or fill slopes of two horizontal units to one vertical unit (2H:1V) or greater is required.
- E. Engineered Design Required: All retaining walls required to obtain a building permit shall be designed by an engineer licensed by the State of Utah.
- F. Height, Separation and Plantings:
  - 1. For the purposes of this subsection, the height of a retaining wall is measured from the bottom of the footing to the top of wall. If a retaining wall has a varying height along its length, the height is the largest value of the measured height along the length of the wall.
  - 2. Depending on the construction material used, distances will be measured to the face of the wall or the projection of the footing, whichever is greater.
  - 3. For the purposes of this subsection, front setback area shall mean the setback area adjacent to a street. For corner lots, as defined in the Land Use Ordinance Chapter 2 (170), the two (2) front setback areas shall be the two (2) front yards. All setback measurements are taken from the property lines for the parcel.
  - 4. A single retaining wall shall not exceed nine feet (9') in height. Within the front setback area, each retaining wall shall not exceed four feet (4') in height.
  - 5. Terracing of retaining walls is permitted, but the combined height of all walls shall not exceed eighteen feet (18'). Walls with a separation distance of at least two times the height of the tallest wall (2 x height, height of largest of 2 walls) from face of wall to face

of wall shall be considered as separate walls. In a terrace of retaining walls, a minimum horizontal separation of at least half the height of the tallest wall of the terraced retaining wall group (height of largest wall/2) is required as measured from the back of the lower wall to face of the higher wall. See figure 1 below

6. Walls within thirty feet (30') of a street.
  - a. The area in front of each retaining wall shall require a minimum of five (5) shrubs for every twenty (20) linear feet of planting area. Shrubs shall be watered by drip irrigation to minimize erosion.
  - b. Retaining walls may be concrete, colored concrete, feature decorative or architectural finished such as, but not limited to, rock wall, board form, or split face.
7. Retaining walls shall be located at least seven feet (7') away from any property line that is adjacent to a street.
8. Drainage for walls needs to including a free draining gravel layer wrapped in filter fabric located behind the retaining wall with drain pipe day lighting to a proper outlet or weep holes placed through the base of the wall.

Figure 1



- G. Submittals: The following documents and calculations prepared by a licensed engineer in the State of Utah shall be submitted with each retaining wall permit application:
  1. Profile drawings with the base elevation, exposed base elevation, and top of wall labeled at the ends of the wall and every fifty (50) linear feet or change in grade;
  2. Cross-sectional drawings, including surface grades and structures located in front of and behind the retaining wall at a distance equivalent to three (3) times the height of the wall and, if the wall is supporting a slope, then the cross-section shall include the entire

- slope plus surface grades and structures within a horizontal distance equivalent to one times the height of the slope;
3. A site plan showing the location of the retaining walls with the base elevation, exposed base elevation, and top of the wall labeled at the ends of the wall and every fifty (50) linear feet or change in grade;
  4. Material strength parameters used in the design of the retaining wall, substantiated with laboratory testing of the materials as follows:
    - a. For soils, this may include, but is not limited to, unit weights, direct shear tests, triaxial shear tests and unconfined compression tests;
    - b. If laboratory testing was conducted from off-site but similar soils in the area, the results of the testing with similar soil classification testing must be submitted;
    - c. For segmented block walls, the manufacture's test data for the wall facing, soil reinforcement, and connection parameters shall be submitted in an appendix;
    - d. Minimum laboratory submittal requirements are the unit weight of retained soils, gradation for cohesionless soils, Atterberg limits for cohesive soils, and shear test data;
    - e. Soil classification testing shall be submitted for all direct shear or triaxial shear tests;
    - f. If a Proctor is completed, classification testing shall be submitted with the Proctor result; and
    - g. Laboratory testing shall be completed in accordance with applicable American Society for Testing and Materials (ASTM) standards;
  5. Design calculations ensuring stability against overturning, base sliding, excessive foundation settlement, bearing capacity, internal shear, and global stability as follows:
    - a. If geogrids are used, additional calculations for pullout, tensile overstress, internal sliding, facing connection, and bulging shall be completed, and other calculations used to meet the design standards for the particular material are required;
    - b. The design engineer shall indicate the design standard used and supply a printout of the input and output of the files in an appendix;
    - c. Calculations shall include analysis under static and seismic loads, which shall be based on the characteristic earthquake or maximum credible earthquake (MCE), with spectral acceleration factored for site conditions in accordance with the IBC;
    - d. Mechanically stabilized earth (MSE) walls shall be designed in general accordance with 2001 FHWA NHI-00-043 "Mechanically Stabilized Earth Walls and Reinforced Soil Slopes" or the National Concrete Masonry Association (NCMA) "Design Manual for Segmental Retaining Walls";
    - e. Rock walls shall be designed in general accordance with the 2006 FHWA-CFL/TD—06-006 "Rockery Design and Construction Guidelines"; and
    - f. Concrete cantilever walls shall be designed in general accordance with specification provided in current American Concrete Institute or American Society of Civil Engineers publications;

6. A global stability analysis demonstrating minimum factors of safety of at least 1.50 under static conditions and at least 1.10 under seismic loading conditions as follows:
    - a. Factors of safety results shall be presented to the nearest hundredth;
    - b. Seismic loads shall be based on the characteristic earthquake, with spectral acceleration factored for site conditions in accordance with the IBC;
    - c. The cross sectional view of each analysis shall be included, and the printout of the input and output files placed in an appendix; and
    - d. The global stability analysis may be omitted for concrete cantilever retaining walls that extend to frost depth, that are less than nine feet (9') in exposed height, absent of supporting structures within thirty feet (30') of the top of the wall, and which have less than ten horizontal units to one vertical unit (10H:1V) front and back slopes within thirty feet (30") of the retaining wall structure;
  7. A drainage design, including a free draining gravel layer wrapped in filter fabric located behind the retaining wall with drain pipe day lighting to a proper outlet or weep holes placed through the base of the wall, however:
    - a. A synthetic material designed for the application may be used in lieu of the gravel;
    - b. If the engineering can substantiate proper filtering between the retained soils and the drain rock, then the filter fabric may be omitted; and
    - c. If the retaining wall is designed to withstand hydrostatic pressures or the retained soils or backfill is free draining as substantiated through appropriate testing, then drainage material may be omitted from the design;
  8. The design engineer's acknowledgement of the soil strength parameters used in the design and the engineer's acceptance of the site for use of the retaining wall and if a separate geotechnical report was prepared and used by the design engineer, the geotechnical report shall be submitted, substantiating the values used for the materials strength analysis; and
  9. An inspection frequency schedule.
- H. Inspections and Final Report: The design engineer shall make all inspections needed for final approval and acceptance of the retaining wall when construction is complete. A final report from the engineer shall state that the retaining wall was built according to the submitted design. The report shall include details of the inspections of the wall in accordance with the inspection frequency schedule. All pertinent compaction testing shall also be included with the final report.