

**GREENWOOD VILLAGE
CONSTRUCTION SITE MANAGEMENT
MANUAL**



MAY 2022

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Record of Changes

The Construction Site Management Manual was codified in 2000 and revised in 2005. No updates or revisions to the CSMM have been complete even as the Municipal Code and the Greenwood Village Drainage Criteria Manual were updated. There have been several Municipal Code and drainage regulations revisions and updates to keep current with federal, state, and local standards and regulations. This revision will begin tracking changes to the CSMM for clarity. Future revisions to this Greenwood Village Construction S Manual adopted by Council will be added to the history section regardless of impact to policy.

- 1950 Incorporation of the City Greenwood Village. Storm drainage was managed with currently accepted engineering drainage practices.
- 2003 Adoption of the Construction Site Management Manual to conform to federal, state, and local requirements and standards.
- 2022 Adoption of the updated Greenwood Village Construction Site Management Manual to incorporate City Council direction as follows:
 - 1. Apply the revised Greenwood Village Drainage Criteria Manual as codified in 2019.
 - 2. Apply the codification of landscape requirements in 2011 and 2021
 - 3. Update the manual to clarify language, correct errors, and update processes. The revisions do not add and new policies, procedures, or fees

Abbreviations and Acronyms

ANSI American National Standards Institute

Abbreviations for Units of Measurement

cfs	cubic feet per second
cy	cubic yards
fps	feet per second
lbs/sf	pounds per square foot
mg/L	milligrams per liter
sq. ft.	square feet

Definitions

Datum – Historically, the standard vertical datum in use for newly created or revised FIS reports and FIRMs was the National Geodetic Vertical Datum of 1929 (NGVD29). With the finalization of the North American Vertical Datum of 1988 (NAVD88), many FIS reports and FIRMs are being prepared using NAVD88 as the referenced vertical datum. All flood elevations in the FIS for Greenwood Village are referenced to NAVD88. New Construction - Structures for which the start of construction commenced on or after December 16, 1980, which is the date of publication of the initial FIRM map for the Village.

Final Stabilization - The condition reached when all ground surface disturbing activities at a site have been completed, and for all areas of ground surface disturbing activities, a uniform vegetative cover has been established with an individual plant density of at least 70 percent of pre-disturbance levels, or equivalent permanent, physical erosion reduction methods have been employed.

Village – The Village refers to the City of Greenwood Village. In the context of decision-making and appeals related to these criteria, the Village means the City Manager or his/her designee.



1.0 Sitework Permits

1.1 Introduction

Construction projects that propose changes to landscaping, site drainage patterns, utilities, grading, or that impact the impervious area are considered sitework and require a sitework permit. Sitework permits include landscaping, grading, or flatwork. Examples of impervious area include patios, decks, driveways, sidewalks, and road construction. Landscaping and grading activities can alter the existing drainage paths thereby adversely impacting adjacent properties. Additional impervious area increases the runoff and can adversely impact the capacity of downstream drainage systems. Therefore, the City of Greenwood Village (Village) regulates these types of activities with three types of sitework permits.

Greenwood Village Municipal Code Section 16-2-510 states that “No permit is required for landscaping activities for developed residential single-family homes except under any of the following conditions:

1. The landscaping activity involves structures, patios, fences, walls, or creating berms;
2. The landscaping activity alters existing drainage paths;
3. The landscaping activity involves excavation or fill more than ten cubic yards (10 cy); or
4. The area to be landscaped or graded is one (1) acre or more in size.

1.2 Sitework Permit Provisions

1. For the purposes of this Manual, residential or commercial construction projects that change the drainage or occurs within drainage easements, that include grading activities, or that disturb the impervious area are classified as Sitework. Sitework that meets the criteria below shall be required to obtain the appropriate permit:
 - a. Landscaping Permit: Sitework that includes landscaping and includes the following activity:
 - i. Structures, patios, fences, walls, and berms; or
 - ii. Alters the existing drainage paths or is located in an easement; or
 - iii. Landscape or grading that is one (1) acre or more in size.
 - b. Grading Permit: Sitework that includes excavation or fill of more than ten cubic yards of material.
 - c. Flatwork: Sitework that includes disturbing or changing the existing impervious area as listed below:
 - i. Removal and replacement of more than 100 square feet of existing impervious area; or
 - ii. Addition of more than 100 square feet of new impervious area.



- d. Commercial Parking Lot:
 - i. Resurfacing/repair and parking striping replacement; or
 - ii. Redesign of drainage patterns and/or parking layout.

The existing impervious area is defined as the impervious area in existence when the property was initially developed or the area shown on the 1998 aerial photography, whichever is later. Any impervious areas added to the existing impervious area shall be considered as new impervious areas for all calculations.

- 2. The following activities shall not require one of the sitework permits:
 - a. Sitework that is authorized by other valid permits that have been issued by the Village. The scope and nature of the sitework shall be clearly defined on the approved plans for the other permits, and such activities shall meet all other requirements of this Chapter.
 - b. Cemetery graves.
 - c. Agricultural and gardening activities that do not change the shape or contours of the existing ground.
 - d. Exploratory borings under the direction of a qualified registered professional engineer. However, test pits shall require either a Landscaping or Grading Permit, depending upon the amount of excavation.
 - e. Sitework activities performed on an emergency basis by government agencies for the public health, safety, and welfare.
 - f. Sitework activities performed as part of a Village Capital Improvements Project

1.3 Submittal Requirements

1.3.1 Permit Applications

A building permit application shall be completed for all types of sitework permits. A site plan must be submitted with the application. Sitework cannot begin until the application has been reviewed and approved by the Community Development Director or designee.

1.3.2 Contents of the Application

The application shall include the information shown in Table 1-1. The items marked with an “O” are optional depending upon the scope of the Sitework. Items marked with an “X” are required.



Table 1-1: Permit Application Checklist

Item	Landscape	Grading	Flatwork
1. Site plan	X	X	X
a. Plan of the proposed development shall be provided at a scale of 1" = 10' to 1" = 100'	X	X	X
b. A topographic map shall be provided with two-foot existing and proposed contours tied to the Greenwood Village "Control Diagram" (Figure 2-1).	O	X	O
c. Property lines, easements, and purposes of easements.	X	X	X
d. Streets.	X	X	X
e. Existing structures and improvements, irrigation ditches, Major Drainageways, and existing wetlands.	X	X	X
f. Proposed improvements, including impervious areas, plantings, delineation of grading activities, and erosion control measures.	X	X	X
g. Location and elevations of all floodplains affecting the property.	X	X	X
h. Location of all existing and proposed utilities affected by or affecting the Sitework.	X	X	X
i. Location of all existing and proposed utilities affected by or affecting the Sitework.	X	X	X
2. Additional reports and plans as needed	X	X	X
a. Geotechnical report for foundation or retaining wall design or slope stability analysis.		O	
b. Sitework activities must meet the water quality and flood attenuation requirements as indicated in Table 1-1 of the Greenwood Village Drainage Criteria Manual	X	X	X

1.4 Sitework Inspections

The Village will perform several inspections of Sitework before, during, and after construction is completed. This is to ensure that projects are being completed in accordance with the approved site plan. Any changes that occur during construction shall be submitted for review and approval by the Community Development Director or designee. The Community Development Director or designee will perform the following inspections for most Sitework:

1. Pre-construction Inspection – This inspection will be performed prior to issuance of a permit for sites constructing foundations. Existing damage to public facilities such as streets, curb and gutter, sidewalks, and ditches will be documented.
2. Erosion Control – This inspection will be performed at the start of construction to ensure that any erosion and sediment control measures shown on the approved site plan are in place prior to any activities that will expose the soil.
3. Periodic Inspections – These inspections will be performed at any time during the construction period.
4. Final Grading Inspection – This inspection will be performed near the end of the construction period to ensure that the grading of the site is completed per the approved site plan. For new single-family residents, new commercial buildings, and some new accessory structures a certified grading plan by a licensed engineer must be provided.
5. Ground Cover (Final Stabilization Inspection) - This inspection will be performed at the end of the construction period to ensure that all disturbed areas have adequate ground cover. The final stabilization shall be completed before the project is considered complete.
6. Pond (Drainage Facility) - This inspection is performed by the engineer that designed the facility. The inspection is completed at the end of construction and the design engineer must certify that the facility was completed in conformance with the approved design. The Community Development Engineer must inspect the facility for completion.

1.5 Sitework Criteria

1.5.1 Excavations

All excavations that are a part of Sitework shall meet the following criteria:

1. Temporary cut slopes shall not be steeper than 2 (horizontal) to 1 (vertical), and permanent cut slopes shall not be steeper than 3:1.
2. Temporary excavations for foundations, utility trenching, and other improvements shall comply with all applicable safety regulations, including Occupational Safety and Health Agency (OSHA) regulations.
3. Adequate drainage facilities shall be constructed to protect all cut slopes against erosion or slope failure.



1.5.2 Fills

All excavations that are a part of Sitework shall meet the following criteria:

1. Fill slopes shall not be steeper than 3:1, unless a slope stability analysis has been prepared by a professional engineer licensed in the State of Colorado.
2. Fills shall not be constructed on existing slopes that are steeper than 2:1.
3. Existing slopes that are between 2:1 and 5:1 that are to receive fill material shall be benched prior to placement of fill.
4. Fill material shall be free of organic material. The material must also be free of rubble or rocks with a maximum dimension in excess of 12 inches unless a plan has been prepared by a professional engineer licensed in the State of Colorado.
5. Fill material shall be compacted to a minimum of ninety percent of Standard Proctor maximum density.
6. Adequate erosion control shall be constructed to protect all fill slopes against erosion or slope failure.

1.5.3 Slope Setbacks

To minimize the potential for damage to adjacent properties from sediment deposition or erosion, provide access for maintenance, and to blend the slope into the existing ground surface, the following slope setbacks shall be considered minimums:

1. Setbacks from the slope to the property or easement lines should be a minimum of 2 feet or;
 - a. At least 20% of the height of the slope at the top of the slope, but not greater than 10 feet.
 - b. At least 50% of the height of the slope at the bottom of the slope, but not greater than 20 feet.
2. Setbacks from the slope to structures should be;
 - a. At least one third of the height of the slope at the top of the slope, but not greater than 40 feet measured at the outer edge of the footing.
 - b. At least 50% of the height of the slope at the bottom of the slope, but not greater than 15 feet measured at the face of the building.

1.5.4 Erosion and Sediment Control

Erosion and sediment control measures shall be installed in accordance with Chapter 16 of the Greenwood Village Drainage Criteria Manual or the approved erosion control plan for all Sitework. The following initial site stabilization measures are generally required to be installed:

1. Silt fencing, erosion control logs and/or other approved perimeter controls shall be installed downgrade of all disturbed areas.
2. Vehicle tracking control shall be installed at the construction entrance.
3. Additional measures as required by the Community Development Director or designee.



2.0 Construction Site Maintenance, Sanitation, and Safety

2.1 Introduction

Construction site must be maintained to decrease nuisances to surrounding properties and roads. Sanitation and safety measures are intended to reduce the impact of construction sites on adjacent properties by providing adequate sanitation facilities for employees and accessible containers for construction waste. All construction sites on private property within the Village are required to have sanitation and construction waste facilities, utilize safety measures and when disturbing the land, implement erosion control measures as provided in Chapter 16 of the Greenwood Village Drainage Criteria Manual. Maintenance of the sanitation, safety, and erosion control facilities is required to reduce the impact.

2.2 Sanitation Facilities

Adequate sanitary facilities must be provided on construction sites for worker use. Sanitary facilities must be located on the property and not in the public right-of-way or closer than ten feet from the front, or five feet from side or rear property line. Sanitary facilities must be screened and/or located in an area that is the least visible to adjacent properties. An all-weather surface that meets the requirements of Vehicle Tracking Control in Chapter 16 of the Greenwood Village Drainage Criteria Manual is required to access the sanitation facilities for maintenance or removal.

Portable toilets must be available to workers during the “active construction process” (i.e., from initial site preparation until completion of building construction). If there are inactive construction periods of one month or more when no workers are on sites served by the unit, toilets are not required during such times.

Portable toilets must be placed at least one hundred (100) feet from any body of water and installed in such a way as to ensure that there is no possibility of a spill or run-off into any body of water.

Owners of property or contractors in control of the property containing portable toilets are responsible for maintaining the portable toilets in a sanitary and odor-free condition.

2.3 Construction Waste Facilities

Adequate construction waste facilities must be provided on construction sites. Dumpsters, garbage cans, waste containers, and other similar types of containers must be used to contain solid waste. Liquid waste and hazardous materials must be contained and disposed of at a proper waste depository.

Construction waste facilities must be located on the property and not in the public right-of-way or closer than five feet from a front, side, or rear property line. Construction waste facilities must be screened and/or located in a location that is the least visible to adjacent properties. An all-weather surface, that meets of the requirements of Chapter 16 of the Greenwood Village Drainage Criteria Manual, is required to access the waste facilities for maintenance or removal.



2.4 Material Storage

Material storage area(s) must be designated on construction sites. Materials are not allowed to be stored in the public right-of-way or closer than five feet from a side or rear property line, must not block access, must not exceed the height of an allowed accessory structure, and must be placed in a location that is the least visible to adjacent properties. An all-weather surface that meets all of the requirements of Chapter 16 of the Greenwood Village Drainage Criteria Manual is required for all materials storage areas and access to those areas.

2.5 Construction Trailers

Construction trailers must be located on the same lot as the construction, must not be in the public right-of-way or closer than five feet from a side or rear property line, and must not exceed the height of an allowed accessory structure. Construction trailers must be screened and/or located in a location that is the least visible to adjacent properties. An all-weather surface that meets of the requirements of Chapter 16 of the Drainage Criteria Manual is required to access construction trailers.

A building permit is required for a construction trailer. All trailer areas must be monitored on a regular basis to maintain the area in a neat and orderly condition. A construction trailer is only to be used for construction business supporting the construction project.

Trailer Removal - Construction trailers must be removed from the site when the last structure for which the trailer is permitted has been constructed and occupied, or within 10 days after the construction activity has ceased, whichever occurs first. After a construction trailer is removed from the site, the grounds must be restored to the condition they existed prior to trailer installation.

2.6 Sales Trailers/Sales Offices

Sales trailers/offices must be located within the subdivision where the sales are taking place, must not be in the public right-of-way or closer than five feet from a front, side, or rear property line, and must not exceed the height of an allowed accessory structure. Sales trailers must be screened and/or located in a location that is the least visible to adjacent properties.

All sales trailers must be serviced by a temporary potable water supply and a temporary sewage system as approve by the Village.

Sales trailers must be handicap accessible as required by ANSI. All trailer areas must be policed on a regular basis to maintain the area in a neat and orderly condition. Trailers located in a residential area must be skirted with a fire-retardant material and must be screened or located in location not obtrusive to adjacent properties. The maximum number of sales trailers is limited to one (1) per Subdivision/ Development.

Trailer Removal - Sales trailers must be removed from the site when the last lot or unit is sold. A sales trailer that is no longer in use or unoccupied for more than 90 days must be removed. An extension can be granted to removal as allowed by the Community Development Director or



designee. After a sales trailer is removed from the site, the grounds must be restored to the condition they existed prior to trailer installation.

2.7 Construction Signs

Construction signs denoting architectural, engineering or construction firms engaged in work on a construction site and/or announcing future use of the property must follow the Greenwood Village Municipal Code, Chapter 16, Section 21 (Temporary signs).

2.8 Construction Fencing

Construction fencing must be provided for excavation below grade of more than 30 inches that is unattended at any time or open overnight. Five-foot chain-link construction fencing is required where permanent fencing is not provided.

2.9 Emergency Access

Vehicle access for firefighting and other emergency vehicles must be provided within construction sites. Vehicle access must be provided to within 100 feet of temporary or permanent fire department connections. In addition, vehicle access must be provided to within 150 feet of the outside of any building under construction or demolition.

Emergency vehicle access must be provided which meets the requirements of the local fire department including either temporary or permanent roads or drives with a minimum width of 20 feet, meets the turning requirements, and meets be an all-weather surface capable of supporting the appropriate vehicle loading as required by the local fire department

Key boxes or other means of access must be provided for all gates along the vehicle access route.

2.10 Parking

When possible, on-site parking for employees must be provided at construction sites. Parking on public and private streets is allowed when adequate on-site parking is not available. However, the parking must be managed to minimize impact to adjacent properties and must not obstruct vehicle access for firefighting and other emergency vehicles. An all-weather surface that meets of the requirements of Chapter 16 of the Greenwood Village Drainage Criteria Manual is required for all on-site parking areas and access to those areas.

Vehicle access on the adjacent public or private streets must maintain a minimum width of 20 feet and must meet the turning requirements of the local fire department.

2.11 Erosion and Sediment Control

Erosion Control measures must be installed per the approved plan and maintained per Chapter 16 of the Greenwood Village Drainage Criteria Manual.



An illicit discharge is any discharge of liquid that is not entirely composed of stormwater. It is deemed a nuisance to discharge any liquid or substance that is not entirely composed of stormwater. Any refuse or offal that becomes suspended in, carried by, or mixed with stormwater is deemed an illicit discharge. (Municipal Code Section 7-2-150)

Mud and dirt that is tracked out onto the street or flows from the site to private property is considered an illicit discharge.

To minimize the potential for illicit discharges:

- Locate sanitary facilities away from concentrated flows;
- Store liquid waste and hazardous materials at a proper waste depository;
- Concrete truck wash-out must be contained on-site at an approved location or disposed of at an approved waste depository; and
- Provide erosion control measures as shown on the approved erosion control plan.