Building Services
808 West Spokane Falls Blvd
Spokane WA 99201-3343
(509) 625-6300

GEN-16
GRADING
MOVING EARTH

This Grading Packet has been designed for the commercial contractor in order to explain the Building Department's requirements for Grading/Moving Earth. It contains:

1. Exemptions from a Grading Permit
2. Grading Permit Requirements
3. Permit and Inspection Fees
4. Important Grading Regulations
5. Inspections
6. Final Reports
7. Grading Permit Application (includes requirements and signed acknowledgements for Civil Engineers, Soils Engineers, and Engineering Geologists)

EXEMPTIONS FROM A GRADING PERMIT

The following is a list of jobs that **require no permit.** Note that these exemptions generally will not apply to large projects. However, should any one of them pertain to your project, you do not need to acquire a permit.

1. Grading in an isolated, self-contained area, provided there is no danger to the public, and that such grading will not adversely affect adjoining properties.
2. Excavation for construction of a structure permitted under current code.
3. Cemetery graves.
4. Refuse disposal sites controlled by other regulations.
5. Excavation for wells or trenches for utilities.
6. Mining, quarrying, excavating, processing or stockpiling sand, rock, gravel, aggregate, or clay controlled by other regulations, provided such operations do not affect the lateral support of, or significantly increase stresses in, soil on adjoining properties.
7. Exploratory excavations performed under the direction of a registered design professional.

IMPORTANT: Earthwork done on the public right-of-way needs authorization through the Department of Engineering Services. If necessary, call them at (509) 625-6700 for requirements.

PERMIT REQUIREMENTS

The following **must be submitted to the Building Official prior** to obtaining a permit and commencing grading:

[ ] 1. Grading application.
[ ] 2. Three sets of specifications giving construction and material requirements.

[ ] 3. Eleven (11) sets of plans, prepared and stamped by a licensed professional, presenting the following:
   a) Location/site vicinity, owner, plan preparer.
   b) Property limits, ground contours, details of terrain and drainage.
   c) Finish contours to be achieved by grading, and proposed drainage channels.
   d) All drainage devices to be constructed and estimated area runoff.
   e) Location of any buildings or structures within 15 feet of proposed grading.
   f) Potential disposal areas for rocks too large to be used as fill material (see regulations concerning "FILLS" below).

[ ] 4. Supporting data presented in a Soils Engineering report (three copies):
   a) Data regarding nature, distribution and strength of existing soils.
   b) Conclusions and any recommendations for grading procedures.
   c) Design criteria for corrective measures.
   d) Opinions on adequacy of site for proposed use.
   e) Date of report as well as name, address, and phone number of preparer/firm.

[ ] 5. Supporting data presented in an engineering geology report (three copies):
   a) Adequate description of site geology.
   b) Conclusions and recommendations regarding effect of geologic conditions.
   c) Opinion of the site's adequacy based on intended use and geologic factors.
   d) Date of report as well as name, address, and phone number of preparer/firm.

[ ] 6. State Environmental Policy Act (SEPA) Review – A series of environmentally-geared questions to be filled out only if you plan to grade more than 500 cubic yards of material.

PERMIT & INSPECTION FEES

GRADING PERMIT:

Volume of graded material (in cubic yards)	Fees (in dollars)
100 or less	28
101 to 1,000	28 + 12 for each 100 yd^3 over 100 yd^3
1,001 to 10,000	136 + 10 for each 1,000 over 1,000
10,001 to 100,000	226 + 45 for each 10,000 over 100,000
100,001 and over	631 + 25 for each 10,000 over 100,000

GRADING PLAN REVIEW:

Volume of graded material (in cubic yards)	Fees (in dollars)
50 or less	no fee
51 to 100	20
101 to 1,000	25
1,001 to 10,000	35
10,001 to 100,000	35 + 17 for each 10,000 over 10,000
100,001 to 200,000	188 + 10 for each 10,000 over 100,000
200,001 and over	288 + 5 for each 10,000 over 200,000

The processing fee is $25.
Failure to obtain a Grading Permit is a Class One infraction under SMC 1.05.150

BONDS: The Building Official may require bonds in order to assure that the work, if not completed properly, will be corrected to eliminate hazardous conditions.

IMPORTANT GRADING REGULATIONS

CUTS

- The slope of cut surfaces shall be no steeper than is safe for the intended use, and shall never be steeper than 2H:1V without the written report of a soils/geological engineer.

FILLS

- Fill shall not be placed on slopes that are steeper than 2H:1V, nor shall any fill be steeper than 2H:1V.
- Ground surface shall be prepared to receive fill by removing vegetation, topsoil, and other unsuitable materials, and scarifying the ground to provide a bond with the fill material.
- Fills should not carry large amounts of organic material or rocks over 12 inches in diameter.
- All fills shall be compacted to at least 90 percent (modified proctor) of maximum density.
- Exceptions to the above entries can only be made given the authorization and/or recommendations found in the approved Soils Engineering report.

BENCHING

- Benching shall be provided when placing fill onto slopes steeper than 5H:1V and five feet high.
- Benching shall take place in sound bedrock and be at least ten feet wide.
- The area beyond the toe of the fill needs to be sloped for sheet overflow or else a paved drain must be provided.

TERRACING *(Required of cut and fill slopes steeper than 3H:1V)*

- Terraces at least six feet in width shall be established at not more than 30-foot vertical intervals.
- For slopes between 60 and 120 feet high, one terrace should be placed at mid-height with a 12-foot width.
- For slopes greater than 120 feet high, all terrace widths and spacings should be designed by a Civil Engineer.

DRAINAGE FACILITIES *(Required of cut and fill slopes steeper than 3H:1V)*

- Swales or ditches shall be paved with three-inch concrete and bare a minimum five percent gradient. The minimum depth is one foot and minimum paved width is five feet.
- No swale or ditch may collect runoff from a tributary area exceeding 13,500 square feet without discharging into a down-drain channel.
- A drainage gradient of two percent is needed for building pads. (A one-percent gradient will suffice if no fill depth, no finish cut or fill slope, **and** no existing face slope of 10H:1V exceeds a ten-foot vertical height/depth).
- All slopes need to be equipped with non-erosive drainage channels (surface and/or subsurface) as necessary. These should be designed to carry waters to the nearest practicable drainage way.
- If the runoff area lying above a cut slope inclines toward the cut and has a drainage path greater than 40 feet (measured horizontally), then paved interceptor drains must be installed.

- When required, interceptor drains shall be installed along the top of the cut slope and carry the following specifications: three-inch minimum thickness (paved with concrete or reinforced gunite); 12-inch minimum channel depth; 30-inch minimum channel width.

EROSION

- Erosion controls such as vegetation, check dams, riprap, etc., should be installed prior to final inspection.

CUT & FILL SETBACKS

- A site boundary must be between two and ten feet from the top of a cut slope but no closer than the distance of the one-fifth the vertical height of the cut.
- A site boundary must be between 2 and 20 feet from the toe of a fill slope but no closer than the distance of one-half the vertical height of the slope.
- Special precautions (retaining walls, additional setbacks, surface water control, etc.) may be ordered by the Building Official if adjacent off-site property is developed and in potential danger due to the placement of a fill slope.

INSPECTIONS

Every grading project requiring a permit also requires proper inspection. Thse inspections for projects where the Building Official determines that the nature of the work applied for is such that a report is necessary shall be done by a Civil Engineer, Soils Engineer, and Engineering Geologist independently hired by the permit applicant. Below is a list of grading features to be observed by each of the respective engineers.

1. Civil Engineer: Establishment of line, grade, and surface drainage
2. Soils Engineer: Preparation of natural ground, as well as placement and proper compaction of fill as set forth in the IBC
3. Engineering Geologist: Inspection of any bedrock excavation.

As long as the above requirements are met, each engineer will decide upon an adequate amount of observation time necessary to deem the inspection complete and render the finished grade safe and permissible. The Building Official has the option of inspecting the project at any time in order to assure that adequate control is being exercised by the consulting engineers.

If at any time during his/her series of inspections, the engineer encounters new findings relating to soil/geological conditions, then revised recommendations should be submitted to the Civil Engineer and proper revisions should be made to the main plans. The Building Official should also be given a set for re-approval.

FINAL REPORTS

In addition to the on-site inspections, each engineer must submit a final report:

1. Civil Engineer to prepare an as-built grading plan incorporating:
   a) Original and new ground surface elevations
   b) Lot drainage patterns
   c) Locations and elevations of surface drainage facilities and subsurface drain outlets

2. Soils Engineer to prepare a report incorporating:
   a) Locations and elevations of field density tests
   b) Summaries of field and laboratory tests as well as other substantiating data
   c) Comments on any changes made during grading and their effect on recommendations made in the original soils report

3. Engineering Geologist to prepare a report incorporating:
   a) Final description of the geology of the site
   b) Any new information disclosed during the grading and consequent effect on recommendations incorporated in the grading plan

Upon completion of their reports, each professional consultant as well as the grading contractor must submit a statement that to the best of their knowledge, the work within their area of responsibilities is in accordance with the approved engineering reports/plan. *[The final pages attached to this packet may be signed and used as a formal statement.]*

Notification Of Completion - You must notify the Building Official when all grading and related drainage work is done and all final reports have been submitted. At this time, a final inspection with the Building Official will be arranged. For questions regarding grading, see your Building Official or the IBC.

***NOTE**: See the attached for Grading Permit Application, Engineered Grading Inspection Requirements, and Signed Acknowledgement Forms for Civil Engineers, Soils Engineers, and Engineering Geologists*

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APPLICATION FOR GRADING PERMIT

A complete Grading Permit Application for Engineered Grading designations is comprised of:

- Three (3) complete sets of grading plans and specifications.
- Eight (8) additional copies of the grading site plan.
- Three (3) copies of the Soils Engineering report.
- Three (3) copies of the Engineering Geology report.
- Engineered Grading Inspection Forms.
- SEPA Review Questionnaire.
- This application, completed.

Project Address: _____

Job Description: _____

Contractor Name: _____

Address: _____

Phone: _____

License Number: _____

Owner Name: _____

Address: _____

Civil Engineer Name: _____

Address: _____

Phone: _____

Soils Engineer Name: _____

Address: _____

Phone: _____

Engineering Geologist Name: _____

Address: _____

Phone: _____

Earthwork Quantities: _____

Cubic Yards of Fill: _____

Cubic Yards of Cut: _____

Date and Author of Geotechnical Report: _____

Date and Author of SEPA Checklist: _____

ENGINEERED GRADING INSPECTION REQUIREMENTS
(per IBC Chapter 18)

Duties of the CIVIL ENGINEER

Inspection Services

The Civil Engineer shall provide professional inspection within the engineer's area of technical specialty, which shall consist of observation and review as to the establishment of line, grade and surface drainage of the development area. If revised plans are required during the course of the work, they shall be prepared by the Civil Engineer.

The Civil Engineer will be required to follow the reporting guidelines for Special Inspectors given in Chapter 17 of the IBC.

If, in the course of fulfilling the respective duties specified, the Civil Engineer finds that the work is not being done in conformance with this chapter or the approved grading plans, the discrepancies shall be reported immediately in writing to the permit applicant and to the Building Official.

Final Report Services to be Provided by Civil Engineer

An as-built grading plan prepared by the Civil Engineer showing original ground surface elevations, as-graded ground surface elevations, lot drainage patterns, and the locations and elevations of surface drainage facilities and of the outlets of subsurface drains. As-constructed locations, elevations and details of subsurface drains shall be shown as reported by the Soils Engineer.

Civil Engineers shall state that to the best of their knowledge, the work within their area of responsibility was done in accordance with the final approved grading plan.

Statement of Acknowledgement:

"I have read the above and agree to the conditions and responsibilities contained therein."

NAME (please print): _____

SIGNATURE: _____

DATE: _____

ENGINEERED GRADING INSPECTION REQUIREMENTS
(per IBC Chapter 18)

Duties of the SOILS ENGINEER

Inspection Services

The Soils Engineer shall provide professional inspection within such engineer's area of technical specialty, which shall include observation during grading and testing for required compaction. The Soils Engineer shall provide sufficient observation during the preparation of the natural ground and placement and compaction of the fill to verify such work is being performed in accordance with the conditions of the approved plan and the appropriate requirements of Chapter 18. Revised recommendations relating to conditions differing from the approved Soils Engineer and Engineering Geologist reports shall be submitted to the permit applicant, the Building Official, and the Civil Engineer.

The Soils Engineer will be required to follow the reporting guidelines for Special Inspectors given in Chapter 17 of the IBC.

If, in the course of fulfilling the respective duties specified, the Soils Engineer finds that the work is not being done in conformance with this Chapter or the approved grading plans, the discrepancies shall be reported immediately in writing to the permit applicant and to the Building Official.

Final Report Services to be Provided by Soils Engineer

A report prepared by the Soils Engineer including locations and elevations of field density tests, summaries of field and laboratory tests, other substantiating data, and comments on any changes made during grading and their effect on the recommendations made in the approved Soils Engineer investigation report. Soils Engineers shall submit a statement that to the best of their knowledge, the work within their area of responsibilities is in accordance with the approved Engineering Geologist report and applicable provisions of this Chapter.

Statement of Acknowledgement:

"I have read the above and agree to the conditions and responsibilities contained therein."

NAME (please print): _____

SIGNATURE: _____

DATE: _____

ENGINEERED GRADING INSPECTION REQUIREMENTS
(per IBC Chapter 18)

Duties of the ENGINEERING GEOLOGIST

Inspection Services

The Engineering Geologist shall provide professional inspection within such engineer's area of technical specialty, which shall include professional inspection of the bedrock excavation to determine if conditions encountered are in conformance with the approved report. Revised recommendations relating to conditions differing from the approved Engineering Geologist report shall be submitted to the Soils Engineer.

The Engineering Geologist will be required to follow the reporting guidelines for Special Inspectors given in Chapter 17 of the IBC.

If, in the course of fulfilling the respective duties specified, the Engineering Geologist finds that the work is not being done in conformance with this chapter or the approved grading plans, the discrepancies shall be reported immediately in writing to the permit applicant and to the Building Official.

Final Report Services to be Provided by Engineering Geologist

A report prepared by the Engineering Geologist retained to provide such services in accordance with Chapter 18, including a final description of the geology of the site and any new information disclosed during the grading and the effect of same on recommendations incorporated in the approved grading plan. Engineering Geologists shall submit a statement that, to the best of their knowledge, the work within their area of responsibility is in accordance with the approved Engineering Geology report and applicable provisions of this chapter.

Statement of Acknowledgement:

"I have read the above and agree to the conditions and responsibilities contained therein."

NAME (please print): _____

SIGNATURE: _____

DATE: _____