DIVISION VII
SOIL EROSION AND SEDIMENTATION CONTROL

1. General

lA. Purpose VII-1
1B. Necessity of Grading Permit VII-1
1C. Additional Requirements..... VII-2
1D. Responsibility of Permittee VII-2

2. Permit Application

2A. Grading Permit Application Data Required VII-4
2B. Minimum Design Standards..... VII-5

3. Review, Inspection and Enforcement

3A. General VII-8

4. Construction Methods

4A. Vegetative Protection and Mulching..... VII-9
4B. Silt Fence VII-9

DIVISION VII
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1. GENERAL

1A. Purpose

In accordance with the Michigan Soil Erosion and Sedimentation Control Act (Public Act 347, 1972), the City has adopted an ordinance (Chapter 63 of the City Code) for the purpose of controlling erosion and resultant sedimentation of natural and man-made watercourses and drainageways. As such, the Contractor shall perform all work in accordance with the Ordinance and provide for the proper disposal of storm water, and the protection of soil surfaces in order to prevent uncontrolled runoff and erosion.

1B. Necessity of Grading/Soil Erosion & Sedimentation Control Permit

A grading/soil erosion & sedimentation control permit must be obtained by the Owner or Contractor responsible for any type of construction resulting in an earth change on a private development project.

The following procedures shall be followed for City projects:

a) Plans and a grading permit application shall be made for all City projects which are located within 500 feet of a water course (open County Drain, river, lake, stream, etc.) or involve one acre or more of earth disturbance. This is required by the State of Michigan under Act 347. Upon approval, the grading permit will be issued for the minimum permit fee. In addition, a Wetland and Watercourse Use Permit will be required for any activities within a wetland, watercourse or buffer area. (See **Division I, Section 1D. Permits** for further information on this permit).

b) Monthly inspections will be performed, however, no monthly inspection fee will be charged provided the required erosion controls are properly installed and maintained by the City or the Contractor.

c) The permit holder will be charged an inspection fee for each inspection following the issuance of a correction notice for work that must be performed to implement corrections required prior to the next monthly inspection.

d) City projects which are less than one acre and are not within 500 feet of a water course do not require permits, but do require written approval from the Building Director. The department responsible for the project shall notify the Land Development Coordinator of the project. Notification should indicate in addition to

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11/92; 1/94

the location of the project, the anticipated start and completion dates and a contact person for the project. This will allow the Building Department to have information needed should they receive complaints regarding the project.

City projects shall meet the requirements of **Division VII, Section 2. Permit Application** of these Specifications.

1C. Additional Requirements

Issuance of a Grading Permit does not relieve the Owner, Contractor, or City of the responsibility for securing any permits required by any other City Code, Ordinance, or Public Agency Regulation. Specifically, it shall be noted that a permit is required by the MDNR for activities such as, but not limited to, the following:

a) Grading, stripping, excavating or filling, within the 100-year floodplain of a river, lake, stream, or open channel characterized by perennial flow.

b) Crossing over or erecting a permanent structure in a river, lake, stream, open channel, or bottomland.

c) Grading, stripping, excavating, or filling in a wetland.

Any permit shall become invalid if:

a) The authorized work is not initiated within six months of the date issued, or

b) The authorized work is suspended or abandoned for a period of six months after termination of substantial operations as determined by the Building Director.

If a storm water retention/detention facility is to be constructed as part of the permitted project, and water main testing is also required for the project, the retention/detention facility is to be completed, stabilized, and operable prior to the time of water main testing.

1D. Responsibility of Permittee

During grading operations the permittee shall be responsible for:

a) The prevention of damage to any public utilities or the interruption of utility services (unless previously approved by the City), within the limits of grading and along any routes of travel of the equipment.

b) The prevention of damage to adjacent property; no person shall grade on land so

close to the property line as to endanger any adjoining public street, sidewalk, alley or any public or private property without supporting and protecting such property from settling, cracking or other damage which might result.

c) Carrying out the proposed work in accordance with the approved plans and in compliance with all the requirements of the permit and Chapter 63 of the City Code.

d) The prompt removal of all soil, miscellaneous debris or other material applied, dumped or otherwise deposited on public streets, highways, sidewalks or other public thoroughfares during transit to and from the construction, when such spillage constitutes a public nuisance or hazard. The construction of a haul road or other approved vehicle cleaning method may be required by the Building Director to prevent the spread of debris.

e) All earth changes being designed, constructed and completed in such a manner which shall limit the exposed area of any disturbed land for the shortest possible period of time, within the approved construction sequence.

f) Sediment caused by accelerated soil erosion being removed from runoff water before it leaves the site of the earth change.

g) Any temporary or permanent facility designed and constructed for the conveyance of water around, through or from the earth change area being designed to limit the water flow to a non-erosive velocity.

h) Temporary soil erosion control facilities being removed and earth change areas graded and stabilized with permanent soil erosion control measures.

i) Permanent soil erosion control measures for all slopes, channels, ditches or any disturbed land area being completed within 15 calendar days after final grading or the final earth change has been completed. When it is not possible to permanently stabilize a disturbed area after an earth change has been completed or where significant earth change activity ceases, temporary soil erosion control measures shall be implemented immediately. All temporary soil erosion control measures shall be maintained until permanent soil erosion control measures are implemented.

j) The approved plans and permit being made available for inspection at all times at the site of the earth change.

k) All earth changes being conducted in such a manner which will effectively reduce accelerated soil erosion and resulting sedimentation.

2. PERMIT APPLICATION

2A. Grading Permit Application Data Required

Name, address and telephone number of the Owner, Developer and permit applicant.

A vicinity sketch at the scale of not more than 1" = 200′ or as otherwise determined by the Building Director, indicating the site location as well as the adjacent properties within 500 feet of the site boundaries, showing relationship to any watercourse.

A legal description or boundary line survey of the site on which the work is to be performed.

A soil investigation report, survey or profile which shall include but not be limited to data regarding the nature, distribution, and supporting ability of existing soils or rock on the site and MDOT soil classifications shall be identified for all fill and backfill material.

A plan of the site at a scale of 1" = 40′ showing:

a) Existing and proposed topography at a maximum of two (2) foot contour intervals, elevations or similar slope descriptions, extending at least fifty feet beyond the site boundary lines.

b) Location and description of any structure or natural feature on the site, and on the land adjacent to the site, within at least fifty feet of the site boundary line.

c) Location and description of any proposed structures or development on the site, including the physical limits of each proposed earth change and all proposed temporary and permanent soil erosion control measures.

Plans, sections and details of all drainage provisions, retaining walls, cribbing, planting, anti-erosion devices or other protective devices to be constructed in connection with, or as part of, the proposed work together with a map showing the drainage area of land tributary to the site and estimated runoff of the area served by any drain.

The estimated total cost of the required erosion control measures, including dust emission control, during construction.

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11/92; 1/94

The estimated total cost of protecting all exposed soil surfaces from erosion should construction discontinue.

A certification of the quantity of excavation and fill involved.

A timing schedule indicating the anticipated starting and completion dates of the construction sequence and the time of exposure of each area prior to the completion of effective erosion and sediment control measures, including installation and removal of all temporary measures as related to construction activities.

A program proposal for the continued maintenance of all permanent soil erosion control facilities which remain after project completion, including the designation of the person responsible for the maintenance. Maintenance responsibilities shall become a part of any sales or exchange agreement for the land on which the permanent soil erosion control measures are located.

Other information or data as may be required by the Building Director; such as a soil erosion impact statement to include:

a) Consideration of alternative actions with evaluation of each,

b) A description of probable adverse environmental effects which cannot be avoided,

c) Identification of any irreversible and irretrievable commitment of natural resources, and

d) An analysis of primary and secondary consequences of short-term uses of the environment in relation to the maintenance and enhancement of long-term productivity.

e) Remedial, protective and mitigative measures to be developed and installed for any environmentally detrimental aspect.

2B. Minimum Design Standards

(These standards have been adopted from the Washtenaw County Soil Conservation district).

The following general guidelines should be followed for any type of development (public or private):

a) The development plan should be fitted to the soils and topography so as to create the least erosion potential.

b) Wherever feasible during construction, natural vegetation should be retained and protected. Where inadequate vegetation exists, temporary or permanent vegetation should be established.

c) Where land must be stripped of vegetation during construction, limit the exposed area to the smallest practical size at any one time.

d) Limit the duration of exposure to the shortest practical time.

e) Critical areas exposed during construction should be protected with temporary vegetation and/or mulching.

f) Permanent vegetation and improvements such as streets, storm sewers or other features of the development, capable of carrying storm runoff in a safe manner, shall be installed as early as possible. Streets, storm sewers, etc. should be installed before removing the vegetative cover from an area.

g) Provisions should be made to control the increased runoff caused by changed soil and surface conditions during and after development.

h) Sediment basins to remove suspended soil particles from runoff waters from land undergoing development should be constructed and maintained wherever erosive conditions indicate they are needed to prevent off-site damages.

i) Diversions, grassed waterways, grade stabilization structures, and similar mechanical control measures required by the site shall be installed as early in the development of the area as possible.

Erosion control measures which may be used singly or in combination are shown below together with brief statements of their site adaption or limitations. (The MDNR Guidebook of Best Management Practices for Michigan Watershed and the Oakland County Erosion Control Manual should be consulted for standard detail drawings and further information).

Vegetative Protection

Suitable for all soils capable of supporting plant growth. Vegetation alone will not provide adequate protection on soils that are unstable because of their structure, internal water movement, or excessively steep slopes.

Vegetative protection is divided into:

1. *Short Term Seeding* to protect areas for 12 months or less.

2. *Permanent Seeding or Sodding* for areas to be protected longer than 1 year.

Mulching

To be used with all seeding on disturbed soil areas and for temporary use without seeding during months unfavorable to seeding.

Grassed Waterway

This type of control is a vegetatively lined channel designed to carry concentrated storm water. Such runoff may be flow which has collected in natural depressions, or from diversions, or from other site features. Grassed waterways should not be used for long duration base flows.

Diversions

A diversion consists of a channel or a channel with supporting ridge constructed across a sloping land surface on the contour or with predetermined grades to intercept and divert surface runoff before it gains sufficient volume or velocity to create harmful erosion. It should have capacity to carry storm runoff and may or may not have a vegetative lining depending upon the velocities anticipated and the soil materials in the channel. Flow from a diversion must be discharged into a protected area or a grassed waterway.

Grade Stabilization Structures

These structures are used to reduce grade and to dissipate the energy of flowing water by dropping it in a relatively short horizontal distance. By using these, the grades and velocities in grassed waterways or bare channels can be reduced to noneroding limits. This measure includes drop structures made of concrete, corrugated metal pipe, and other suitable materials.

Channel Linings

This measure consists of the construction of channels having a lining of concrete, stone, gabions, or other suitable material. These are designed to carry runoff from storm flow and must have entrance and exit sections and filtering devices which will prevent failures from blockages, overtopping or other factors.

Bank Erosion Protection

This type of protection is accomplished through a variety of methods which either create a barrier that will withstand the erosive forces exerted by flowing water or create a bank roughness that will reduce the erosive power of the water as it moves along the bank. Methods commonly used include riprap, rock cribs, groins, jetties, piling, etc.

Stream Channel Construction

This type of channel work is for the purpose of relocating or improving the conditions of an existing stream by straightening or realignment. Caution should be exercised to insure that the design includes features that will provide for stable channel bed and banks under runoff conditions from storm flows.

Sediment Basins

These basins consist of an earth fill type dam and spillway or retention area in a drainageway downstream from a construction area for the purpose of trapping sediment and debris. The basin must have an adequate capacity for retention and sediment must be removed and the basin re-stabilized prior to final grading.

Filtering Devices

All runoff carrying sediment from exposed surfaces shall be retained and/or filtered on site so as to prevent sediment from being deposited onto adjacent properties or into existing drainageways. Staked-in-place straw bales, filter cloth, gravel filter beds, or other appropriate measures must be indicated on drawings and installed first in the construction sequence.

NOTE: Any of the above measures may be requested to be installed during the course of construction (even if not on the original drawings) should the Building Director deem it necessary for erosion and sedimentation control.

3. REVIEW, INSPECTION AND ENFORCEMENT

3A. General

The requirements of Chapter 63 of the City Code shall be enforced by the Building Director. The Soil Erosion and Sedimentation Control Plan shall be reviewed and approved by the Building Director. The Building Director shall approve, disapprove or require modification of an application for an earth change permit within thirty calendar days following receipt of

the application. Exceptions to approved standards and specifications may be granted by the Building Director if the alteration or inclusion of other control procedures or measures will improve prevention of accelerated soil erosion and sedimentation during the earth change. The Building Director shall inspect the work unless the Director determines that such inspection requirements may be waived due to the non-hazardous nature of the grading. Soil erosion and sedimentation control measures shall be established prior to mass grading. If the Building Director finds any existing conditions not as stated in any application, grading permit or approved plan, the Director may refuse to approve further work until approval of a revised grading plan which conforms to the existing conditions, or take actions in accordance with Chapter 63, Section 5:666 (Violations and Penalties) of the City Code, which includes the issuance of stop work orders and/or ticketing.

4. CONSTRUCTION METHODS

4A. Vegetative Protection and Mulching

Construction methods for seeding, sodding and mulching shall be in accordance with **Division VIII, Landscaping and Restoration** of these Standards.

Dates, kinds and rates of temporary seed	April 1 - April 15 Spring Oats or Barley (2lbs/1000 s.f.) or Domestic Rye Grass (.5lbs/1000 s.f.) June 1 - July 31 Sudan grass (1 lb./1000 s.f.) August 1 - October 15 Rye (3 lbs/1000 s.f.) or Perennial Rye grass (.5 lbs/1000 s.f.) September 20 - October 15 Wheat (3 lbs./1000 s.f.)

4B. Silt Fence

The Contractor shall install temporary silt fence as shown on the Plans, and as directed by the Public Services Director or Building Director.

A six inch deep trench shall be constructed by either a trenching machine, motor grader, or if equipment cannot be operated on the site, by hand.

Post installation shall start at the center of the low point (if applicable) with the remaining posts spaced six feet apart. Posts shall be installed with at least eighteen inches in the ground. Where an eighteen inch depth is impossible to achieve, the posts shall be adequately secured to prevent overturning of the fence due to sediment loading.

Filter fabric shall be attached to posts by wire, cord, pockets, staples, or other acceptable means. The filter fabric shall be installed such that, six to eight inches of fabric is left at the bottom to be buried and a minimum overlap of eighteen inches is provided at all splice joints. The fabric shall be installed in the trench, such that, four to six inches lie against the side of the trench, and two to four inches across the bottom of the trench in the upstream direction respectively. The trench shall then be backfilled and compacted to prevent any flow from passing under the fence.

During installation, the fabric will be rejected if it is found to have defects, rips, holes, flaws, deterioration, or damage.

The Contractor shall maintain the silt fence until the project is accepted or until the fence is removed at the direction of the Public Services Director or Building Director. The Contractor shall remove and properly dispose of accumulated silt. Filter fabric shall be removed and replaced whenever it has deteriorated to such extent that it reduces the effectiveness of the silt fence.

Silt fence shall remain in place until the Public Services Director or Building Director directs that it be removed. Silt fence which has been removed will remain the property of the Contractor and may be used at other locations provided it is in a condition acceptable to the Public Services Director or Building Director.