# TITLE 8 – CHAPTER 3

# TAZEWELL COUNTY

# EROSION, SEDIMENT

# AND STORM WATER

# CONTROL ORDINANCE

Revisions approved: March 27, 1996
Implementation Date: April 15, 1995

Amendment Dates:
March 1, 2000 – 8TCC3-6 a8 (Fees)
March 30, 2005 – 8TCC 3-6 c (Financial Security Agreement)
March 26, 2008 – 8TCC 3-5 a. & 8TCC 3-6 8.

## TITLE 8 - CHAPTER 3

## EROSION, SEDIMENT AND STORM WATER CONTROL ORDINANCE


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APPENDIX A

APPENDIX B

# TITLE 8, CHAPTER 3

# EROSION, SEDIMENT AND STORMWATER CONTROL ORDINANCE

## 8 TCC 3-1. DEFINITIONS

**"Adjacent lands":** Surrounding land that may either impact a site, or be impacted by potential soil erosion, sediment and/or storm water run-off as a result of land disturbing activities conducted on a site, and at a minimum is an area within fifty (50) feet of the site.

**"Appeals Board":** The Erosion, Sediment and Storm Water Control Appeals Board.

**"Areas of concentrated flow or bodies of water":** Any area where water may accumulate or flow, whether continual or as the result of a storm event, including but not limited to lakes, rivers, streams, creeks, ponds, ditches, swales, gullies, ravines, street gutters and other similar features.

**"Commission":** The Tri-County Regional Planning Commission

**"Control measure":** Any proposed temporary or permanent measures to be installed to control erosion, sediment and storm water run-off from a project area.

**"County":** The County of Tazewell, Illinois.

**"Department":** The Tazewell County Planning and Zoning Department.

**"Development":** The division of a parcel of land into two or more parcels; the construction, reconstruction, conversion, structural alteration, relocation, or enlargement of any structure; any mining, excavation, landfill, or land disturbance; and any use or extension of the use of land.

**"Disturbed Area":** Any area of land on which the pre-development ground surface will be affected or altered by the development activities. This includes but is not limited to grading, clearing, stock piling, tracking and other similar activities.

**"Erosion Control Administrator":** The person appointed by the Tazewell County Board to administer this ordinance.

**"Five year frequency storm event":** The storm event rainfall depth during a twenty-four (24) hour period which is exceeded, on the average, once every five (5) years.

**"Flood Insurance Rate Maps (FIRM)":** Maps prepared by the federal emergency management agency (FEMA) that depict the special flood hazard areas (SFHA) within a community. These maps include insurance rate zones and floodplains any may or may not depict floodways.

**"Institutional use":** A religious, or public use, such as a church, library, public or private school, hospital, or government owner or operated building, structure or land use for public purpose.

**"Land disturbing activity":** Any change in land, which may result in soil erosion from water or wind and the movement of sediments into state or County waters or onto lands in the County, or a change in the amount and/or intensity of storm water run-off, including but not limited to, the covering with an impervious surface, stockpiling, clearing, grading, excavating, rehabilitating, transporting, depositing or filling of land.

**"Normal agricultural practices":** Activities associated with the preparation and tilling of land for the purposes of growing crops, or raising livestock, which may include, but are not limited to, the construction of conservation measures, plowing, disking and cultivating.

**"Perimeter Control":** Any control measure installed between the down slope side of the disturbed area and the property line and/or between the down slope side of the disturbed area and any area of concentrated flow.

**"Pre-project condition":** A condition that may impact erosion, sediment, or storm water run-off characteristics of a site prior to start of construction activity. The pre-project condition shall be based on the predominant land use for the past five (5) years. For example, if a site has been cropland for four (4) of the past five (5) years, and in grass just prior to development, the land use would be cropland for the pre-project condition.

**"Project":** Any development involving modification to land which involves a land disturbing activity.

**"Regional storm water management system":** A system which is designed, constructed, and maintained to provide storm water control for multiple land owners.

**"Road":** Any right-of-way that has been improved for the purposes of providing a surface for vehicular traffic, including any federal, state, county, township, and municipal controlled facilities.

**"Single family dwelling":** A building designed for or occupied by one family.

**"Site":** The lot or parcel on which the project is to be developed.

**"Site Specific plan":** A general erosion and sediment control permit required for projects where slope is greater than 10% and/or the site contains areas of concentrated flow or bodies of water. Slope shall be determined by the maximum slope indicated on the site according to the USDA Soil Survey or topographic survey as prepared by an Illinois Registered Surveyor.

**"Standards":** The Illinois Environmental Protection Agency's Illinois Urban Manual, A Technical Manual designed for Urban Ecosystem Protection and Enhancement published in 1995 and Illinois Procedures and Standards for Urban Soil Erosion and Sedimentation Control published in 1988 by the Urban Committee of the Association of Illinois Soil and Water Conservation District now in effect or as hereafter amended, which is incorporated by reference herein, and the Tazewell County standards for Stormwater Design Analysis, found at Appendix "A" of this article, and the erosion and sediment control criteria and specifications found in Appendix "B" of this ordinance.

**"Standard plan":** A general erosion and sediment control permit for projects where slope is less than 10%, and there are no areas of concentrated flows or bodies of water on or water on or immediately adjacent to the site. Slope shall be determined by the maximum slope indicated on the site according to the USDA Soil Survey or topographic survey as prepared by an Illinois Registered Surveyor.

**"Substantial completion":** The point at which all exterior work is completed and the site can be used for the use intended.

**"Twenty-five year frequency storm event":** The storm event rainfall depth during a twenty-four (24) hour period which is exceeded, on the average, once every twenty-five (25) years.

**"Two-family dwelling":** A building designed for or occupied by two families.

**"Two year frequency storm event":** The storm event rainfall depth during a twenty-four (24) hour period which is exceeded, on the average, once every two (2) years.

**"Utility Service Line":** Means by which utility service if provided to service users, such as electric, telephone and television cable, or gas, water and sewer pipes.

**"Working day":** Shall not include Saturday, Sunday or any holiday when the Tazewell County Offices are closed.

## 8 TCC 3-2. APPLICABILITY OF ARTICLE

This article shall apply to:

a. All projects within the boundaries and jurisdiction of the County. No land surface shall be disturbed unless an erosion and sediment control permit, or an erosion sediment and storm water control permit, has first been issued for that project, except as follows:

1. Land disturbing activities which do not involve the construction of any new single or two-family dwellings, and for which the disturbed area is less than 5,000 square feet;

2. Normal agricultural practices; or

3. Routine maintenance of roads and utility service lines.

4. Tazewell County Road Departments

The Erosion Control Administrator reserves the right to require any non-agricultural, construction development activity, regardless of disturbed area or type of activity, to comply with this ordinance if it is determined to be the cause of, or a contributor to an existing or potential erosion, sediment, or storm water impact.

b. Any land within the boundaries and jurisdiction of the County on which there is located a permanent storm water control measure which was installed pursuant to this ordinance.

## 8 TCC 3-3. STANDARDS FOR DESIGN AND MAINTENANCE OF CONTROL MEASURES FOR SOIL EROSION, SEDIMENT AND STORM WATER

### a. EROSION AND SEDIMENT CONTROL MEASURES

All control measures required under this ordinance shall conform to the design criteria, standards, and specifications provided in the applicable standards, referenced in Appendix B, now in effect or as hereafter amended. All control measures installed shall be sufficient to prevent sediment from leaving the permit site during a 5-year frequency storm event. Measures shall be taken to prevent sediment from leaving the site. When sediment does leave the site , the owner, developer or contractor shall remove the sediment within four (4) hours, or by no later than the end of the work day. For example, installing a rock construction drive, or cleaning tires could be used to minimize tracking of sediment onto public roads.

### b. PERMANENT STORM WATER CONTROL MEASURES

All storm water controls shall be designed so that the peak discharge rate from the permitted area resulting from the 2-year and 25-year frequency storm events for the post-project condition do not exceed the corresponding storm event peak discharges for the pre-project condition. Evaluation of submitted plans shall be based on the Stormwater Design Analyses Standards in Appendix "A", at the end of this ordinance.

### c. REGIONAL STORM WATER CONTROL SYSTEMS

To allow for the beneficial development and maintenance of regional storm water management systems, where they are available and they are appropriate, an applicant may submit a design dependent on such a system. The applicant may submit documentation of the approval for the use of the regional storm water management facility from the governmental agency having jurisdiction over it. The applicant shall submit evidence showing that there will be no adverse flooding impact to any receiving stream between the point of discharge and the regional storm water facility. If the applicant is approved to use the regional storm water management system, the applicant may request exemption from the requirements in this section for permanent on site storm water controls from the Erosion Control Administrator. Such exemption shall not apply to any temporary storm water control measures required by this ordinance.

## 8 TCC 3-4. MAINTENANCE OF CONTROL MEASURES

### a. EROSION, SEDIMENT, AND TEMPORARY STORM WATER CONTROL MEASURES

On-site sediment control measures shall be constructed and functional prior to initiating clearing, grading, stripping, excavating or fill activities on the site.

Sediment control measures and temporary storm water control measures are to be maintained so they are operating effectively until permanent ground surface protection and permanent storm water control measures are established in a manner specified in the applicable permit issued pursuant to this ordinance.

Fully functioning temporary sediment control measures (including but not limited to perimeter sediment controls) shall remain in place until the ground is stabilized with permanent ground cover. The intent of the article is to keep the sites protected at all times until the ground is permanently stabilized. In cases where it is not practical to leave the temporary sediment control measures in place prior to establishing permanent ground cover (for example when control measures need to be removed in order to grade the area or install pavement or sod ) an exception will be made only if one of the conditions listed below will be met. In no way does adhering to one of the conditions below relieve the owner of responsibility to clean-up or repair any damages caused from sediment or storm water run-off leaving the site.

1. Permanent ground cover shall be established with pavement, aggregate or sod within three (3) days of the removal of sediment barriers.

2. Permanent vegetation shall be established by seeding with anchored mulch within three (3) days of removal of sediment barriers during the spring or fall seeding periods. However, on project areas with sloped not exceeding five (5) percent, permanent vegetation shall be established by seeding within three (3) days of the removal of sediment barriers during the spring of fall seeding periods. Summer seeding is acceptable on project areas which shall be watered. This does not apply to concentrated flow areas.

### b. ADDITIONAL CONTROL MEASURES

The Erosion Control Administrator may require additional control measures pursuant to the Standards if determined as necessary after site inspection, and prior to issuing the permit.

## 8 TCC 3-5. GENERAL EROSION AND SEDIMENT CONTROL PERMITS

Before commencing any project involving construction of any new single or two-family dwelling or commencing any project with an area of 5,000 square feet or greater, the owner of the land, or his representative, shall be required to file an application for a General Erosion and Sediment Control Permit, as either a Standard or Site Specific plan, except as otherwise provided in 8 TCC 3-2 and 8 TCC 3-6.

### a. APPLICATION

The applicant shall file the application with the Department on forms provided by the Department. The fee for a Standard plan application shall be in the amount of $150.00 for each permit, and the fee for a Site Specific plan application shall be $200.00 for each permit. However, no fee shall be required for any project the purpose of which is agricultural, or initiated by a local unit of government. There shall be no refund of any fees paid and no application shall be accepted for filing unless the fee has been paid in full. (Amended 3-26-08)

### b. APPLICATION REVIEW

Review of a General Erosion and Sediment Control Permit application shall be limited to verifying that the required information and permit fee have been provided and that it meets the standards. The Erosion Control Administrator shall issue or deny an application by : a) approving the permit for a standard plan within two (2) working days of the filing of a complete application; or b) initiate the review process for a site specific plan and approve the same within five (5) working days of the filing of a complete application. If the permit is denied, it shall be returned to the applicant with a written explanation of its denial. The application shall be deemed approved if no response is made within the time frames provided above.

### c. DURATION

The general erosion and sediment control permit shall be issued for a period not exceeding two (2) years.

### d. CONTENT OF GENERAL EROSION AND SEDIMENT CONTROL PERMIT

The General Erosion Control permit shall contain at a minimum the following general conditions:

1. That written approval be obtained from the Erosion Control Administrator prior to making any modification to the erosion and sediment control plan as set forth in the application; and

2. That all control measures identified in the application shall be installed; and

3. That all control measures shall be maintained during construction; and

4. Such other conditions as the Erosion Control Administrator deems appropriate to ensure compliance with the specific requirements and the intent of this ordinance.

### e. PERMANENT GROUND SURFACE COVER

Under all circumstances, temporary control measures shall be maintained in accordance with 8TCC 3-4. Without exception, all disturbed areas must have permanent ground cover within six months of project completion, or within six months of occupancy, whichever comes first.

## 8 TCC 3-6. EROSION, SEDIMENT, AND STORM WATER CONTROL PERMITS

Before commencing any commercial, institutional, multi-family or industrial or industrial project with an area of more than one-half (½) acre; or a project requiring subdivision approval by a unit of local government with an area of more than one-half (½) acre, the owner of the land, or his representative, shall be required to file an application for an Erosion, Sediment, and Storm Water Control Permit.

### a. APPLICATION

The applicant shall file the application with the Department on forms provided by the Department. The applicant shall supply the number of copies of application documents as provided in the application. Each application shall be accompanied by the following information:

1. Existing site conditions map. A map of existing site conditions on a scale of at least one inch equals one hundred (100) feet, showing the site and immediately adjacent areas and the locations of the following site information:

   i. Site boundaries and adjacent lands which accurately identify site location;

   ii. Lakes, streams, wetlands, channels, ditches, and other water courses on and immediately adjacent to the site;

   iii. Floodways and/or Zone A of the Floodplain as determined on the Flood Insurance Rate Map (FIRM), and indicating the map panel number;

   iv. All off-site drainage onto or through the project site;

   v. Location and dimensions of storm water management systems on or adjacent to site;

   vi. Locations and dimensions of structures, roads, highways, easements and paved areas; and

   vii. Site topography: show contours at vertical intervals as follows:

      (1) Slope of six (6) percent or less, two (2) foot intervals.

      (2) Slope of over six (6) percent but less than fifteen (15) per cent, five (5) foot intervals.

      (3) Slope of over fifteen (15) percent, ten (10) or twenty (20) foot intervals.

2. Plan of final site conditions. A plan of final site conditions drawn to the same scale as the existing site map submitted pursuant to 8 TCC 3-6(a)(1), and which includes information to accurately depict post-construction appearance of site, e.g., paved areas, buildings, landscaping, and other changes to the site, along with other predominant site features, e.g., open areas, bodies of water.

3. Sediment and Erosion control practices. A site construction plan including:
   i. Locations and dimensions of all proposed land disturbing activities;

   ii. Locations and dimensions of all temporary soil and aggregate stockpiles;

   iii. Location, dimensions and construction details of all construction site management control measures necessary to meet the requirements of this ordinance, and including proposed revegetation of disturbed areas;

   iv. Statement regarding provisions for maintenance and maintenance requirements of the construction site management control measures during construction;

4. Storm water management plans and controls. Design calculations and information related to the permanent storm water management system for any project with a net increase of impervious area greater than one-half (½) of an acre. For the purposes of this section, the net increase is the cumulative change since the implementation of this ordinance, April 15, 1996. For example, in year 1, a commercial site increases the parking lot by 20,000 square feet. In year 2, the same commercial site adds a building with an area of 20,000 square feet. In year 1, no permanent storm water control measures (or calculations) are required by the ordinance. In year 2, storm water calculations shall be submitted and shall be based on the total increase of 40,000 square feet of impervious area. The following information shall also be provided by the applicant:

   i. A map showing the drainage area divides, including off-site drainage areas that drain into the site.

   ii. Location and identification of soil types for entire watershed;

   iii. Location and identification of vegetative cover for entire watershed;

   iv. Run-off curve number calculations for both pre- and post-project conditions for all subwatersheds;

   v. Time of concentration calculations for both pre- and post-project conditions for all subwatersheds, and include a map showing hydraulic flow lengths used;

   vi. Peak flow-rate calculations for 2 year and 25 year storms for both pre- and post-project conditions;

   vii. Design calculations for detention basin outlets for both 2 year and 25 year storms, include stage-storage table and discharge rating curve data or outflow calculations (refer to optional form in Appendix A);

   viii. Location dimensions, and construction details of proposed detention basins and outlets;

   ix. Detention volume calculations;

   x. Summary of peak flow-rates for pre-, post- and proposed conditions with detention showing that the requirements of the ordinance are met (refer to optional form in Appendix A); and

5. Schedule or sequence of development or installation of the elements of the site management control measures proposed above.

6. A detailed estimate of quantities and estimated costs, prepared by a registered professional engineer, of all control measures required under this section.

7. A plan of the continued management and maintenance of such permanent control measures.

8. Application fee. An application fee shall be submitted at the time of application. The fee shall be in the amount of $75.00 per acre with a minimum fee of $450.00 and a maximum fee of $3,000.00. However, no fee shall be required for any project the purpose of which is agricultural. A fractional acre shall be rounded to the nearest whole acre. There shall be no refund of any fees paid and no application shall be accepted for filing unless the fee has been paid in full. (Amended 3-26-08)

## b. APPLICATION REVIEW

Within five (5) working days of submittal of the application, the Erosion Control Administrator shall respond in writing to the sediment and erosion control practices portion. Within twenty (20) working days the Erosion Control Administrator shall respond to the storm water management plans and control portion of the application by either issuing a permit, issuing a request for additional information, or issuing a statement denying the permit with an explanation of cause. The application shall be deemed approved if no response is made within the time frames stipulated above.

## c. FINANCIAL SECURITY AGREEMENT

Before any Erosion Sediment and Storm Water Control Permit is issued, the applicant shall deliver to the Erosion Control Administrator a cash bond in the name of Tazewell County for one hundred (100) percent of the applicant's engineer's estimated cost for all control measures required under this section. Said cash bond will be delivered by the Erosion Control Administrator to the Tazewell County Treasurer and deposited in an interest bearing escrow account in a Tazewell County Bank with interest to be paid to the applicant. Each security shall be accompanied by an agreement executed by the applicant, and approved by the Erosion Control Administrator, wherein the applicant agrees to install and maintain all maintenance control measures and specifying a date of completion in accordance with this Ordinance. If the control measures are necessitated by construction which is also subject to Title 8, Chapter 2 of The Tazewell County Code, the applicant may submit cash bond to cover one hundred (100) percent of both the Control Measures required pursuant to this section and the improvements governed by Title 8, Chapter 2. A signed contractor's bid that meets the specifications of the engineer's estimate for the work can be used to establish the amount of security required, if such estimate is accepted by the Erosion Control Administrator.

## d. DURATION

The Erosion Sediment and Storm Water Control Permit shall be issued for a period not exceeding two years.

## e. PERMIT CONDITIONS

The Erosion Sediment and Storm Water Control Permit shall contain at a minimum the following general conditions:

1. The written approval shall be obtained from the Erosion Control Administrator prior to making any modification to the approved erosion and sediment control plan as set forth in the permit;

2. That all control measures required in the permit shall be installed;

3. That all control measures shall be maintained during construction;

4. Such other conditions as the Erosion Control Administrator deems appropriate.

## d. PERMANENT GROUND SURFACE COVER

Without exception, all disturbed areas must have permanent ground cover within six months of project completion, or within six (6) months of occupancy, whichever comes first.

## e. FINAL INSPECTION-NOTICE OF PERMANENT STORM WATER CONTROL MEASURES

Within fourteen (14) days after completion of construction, the applicant may notify the Erosion Control Administrator that the permanent storm water control measures are ready for final inspection. If the inspection shows that the control measures and maintenance plan comply with the Standards in Appendix "A", the Erosion Control Administrator shall issue a Notice of Permanent Storm Water Control Measures. The owner shall record the Notice with the Tazewell County Recorder of Deeds within fifteen (15) days after the Notice is issued.

## 8 TCC 3-7. MAINTENANCE OF PERMANENT STORM WATER CONTROL MEASURES.

Anyone owning property with a permanent storm water control measure existing thereon and installed pursuant to this ordinance, shall maintain the control measures so that it functions in compliance with the Standards.

## 8 TCC 3-8. ENFORCEMENT AND STOP WORK ORDER FEE

This chapter shall be administered and enforced by the Erosion Control Administrator, who shall make or cause to be made, periodic inspections of all work authorized by permits issued in accordance with this ordinance to insure that said construction is in compliance with the provisions of the same; he shall make or cause to be made, investigations of violations of this

chapter and shall cause any violations to be corrected.
Any permit issued pursuant to this ordinance shall be revoked by the Erosion Control Administrator when he finds from personal inspection or from competent evidence that the rules, regulations, or standards under which said permit was issued are being violated. To defray costs of administering stop work orders posted by the field inspectors as a result of a violation of any of the terms of this ordinance, a fee of one hundred and fifty dollars ($150.00) per violation will be charged and an additional ten dollars ($10.00) will be charged per day as the violation exists.

## 8 TCC 3-9. PENALTY

The violation of any of the terms of the ordinance shall constitute an offense punishable by a fine not to exceed five hundred dollars ($500.00), with each day the violation remains uncorrected constituting a separate offense. Such fine is in addition to any other remedy provided by law.

## 8 TCC 3-10. APPEALS BOARD

The Appeals Board shall consider and decide upon appeals of any decision, order, or requirement of the Erosion Control Administrator made pursuant to this ordinance.

a. The Appeals Board is hereby authorized to be established. Said Appeals Board shall consist of 5 members. Each County Board Chairman of the counties adopting this ordinance shall appoint one member, the Soil & Water Conservation Districts shall collectively appoint one member, and the Chairman of the Tri-County Regional Planning Commission shall appoint one member. The members shall be: professional engineers, licensed architects, licensed landscape architects, landscape contractors, earthmoving contractors, home builders, or citizens who have extensive experience in control of storm water and soil erosion. The 5 members on the first Appeals Board shall draw lots to establish terms of 1, 2, 3, 4, and 5 years, respectively. Thereafter, as terms expire, each appointment shall be for 5 years.

b. The Chairman of the Appeals Board shall be elected at the beginning of each calendar year from among the members by a majority of the members.

c. All decisions of the Appeals Board must receive the support of a majority of its members. A majority of the members of the Appeals Board shall constitute a quorum for the transaction of business; and all questions which shall arise at meetings shall be determined by the votes of the majority of members present. The Appeals Board shall keep minutes of its proceedings showing the vote of each member upon every question or if absent or failing to vote, indicating such facts, and shall keep records of its examinations and other official actions. Every rule, and every order, requirement, decision, or determination of the Appeals Board shall immediately be filed in the office of the Board and shall be a public record. The concurring vote of three (3) members of Appeals Board shall be necessary to reverse any order, requirement, decision or determination of the Erosion Control Administrator. The Appeals Board shall adopt its own rules of

procedure not in conflict with state law or this chapter.

## 8 TCC 3-11. APPEALS TO APPEALS BOARD

Any person directly aggrieved by any decision, order, requirement, or determination of the Erosion Control Administrator made pursuant to this ordinance shall have the right to appeal such action to the Appeals Board. Such appeal shall be made within thirty-five (35) days from the date of the action appealed from, shall be filed in writing, and shall include a short, concise statement of why the action is being appealed. The fee for such an appeal shall be $45.00 payable to the Commission and is due with the application. In addition, the person filing the appeal shall pay all required publication costs associated with the appeal.

Upon receipt of a notice of appeal, the Commission shall set a date for a public hearing before the Appeals Board. Such public hearing shall commence not sooner than 15 days nor more than 30 days after the date of receipt of the notice of appeal. At least 15 days notice of the time and place of such hearing shall be published in an newspaper of general circulation in the County. The Appeals Board shall decide the appeal within seven (7) days after the conclusion of the public hearing. The Appeals Board may affirm, modify or reverse any appealed action.

## 8 TCC 3-12. APPEALS TO COURT

Appeals from the Appeals Board shall be made in conformity with the provisions of the Illinois Administrative Review Act, 735 ILCS 5/3-101 et. seq. Copies of any orders or proceedings ordered by the appellant shall be furnished to him at his own cost.

# TAZEWELL COUNTY, ILLINOIS

# EROSION, SEDIMENT AND STORM WATER

# CONTROL ORDINANCE

## APPENDIX "A"

# TAZEWELL COUNTY STANDARDS
# FOR STORMWATER DESIGN ANALYSES

The following are the minimum standard methods and procedures to be used to comply with the stormwater design requirements of the Tazewell County Stormwater and Erosion Control Ordinance. If an applicant determines that different methods are necessary based on site specific conditions, the applicant must request approval from the Erosion Control Administrator to use other methods prior to submittal.

The design methods listed below are readily available in a number of computer programs, including the Soil Conservation Service's TR 20 (SCS) and HEC-1 (U.S. Army Corps of Engineers). Additionally, a simplified methodology which is based on the use of these methods is available in TR 55 (SCS, 1986). TR 55 can be applied using either manual computations or a computerize version.

Rainfall Depth an Intensity Data
Use data from the Illinois State Water Survey, BUL-70/89, 1989 as presented in attached Table 1 and graphically in Figure 1.

Storm Event Rainfall Runoff
Use the SCS Runoff Curve Number Method to determine rainfall runoff depth. See Figure 2-1 and Tables 2-2a through 2-2c (attached) from TR 55. Soil type information is available from the SCS Tazewell County Soil Survey, 1992.

Storm Distribution (Cumulative rainfall versus time)
Use the SCS Type II storm distribution. See attached Table 3 and Figure 3.

Runoff Hydrograph
Use the SCS dimensionless hydrograph. See SCS (1974) for information regarding this procedure. As a substitute for detailed hydrograph analysis, TR 55 (SCS, 1986) can be used, either manually or computer program.

Storage Routing (Detention Pond Analysis)
Use the continuity equation, also known as the Modified-Puls and Storage indication methods. As a substitute for detailed storage routing of a hydrograph, TR 55 (SCS, 1986) can be used, either manually or computer program. If TR 55 is used and a detention basin with a two-stage outlet control structure including a rectangular weir and/or orifice outlet is included as a part of the control measures, use the attached detention basin outlet worksheet to determine and present the structure design information.

Table 1. Rainfall Depth-Duration-Frequency Data

| Duration | Rainfall Depth (inches) for Given Frequency | | | | | |
|---|---|---|---|---|---|---|
| | 2-yr | 5-yr | 10-yr | 25-yr | 50-yr | 100-yr |
| 5-min | 0.36 | 0.45 | 0.53 | 0.64 | 0.73 | 0.83 |
| 10-min | 0.66 | 0.83 | 0.98 | 1.17 | 1.34 | 1.52 |
| 15-min | 0.81 | 1.02 | 1.20 | 1.44 | 1.64 | 1.87 |
| 30-min | 1.12 | 1.39 | 1.64 | 1.97 | 2.25 | 2.56 |
| 1-hr | 1.42 | 1.77 | 2.09 | 2.50 | 2.86 | 3.25 |
| 2-hr | 1.78 | 2.22 | 2.62 | 3.14 | 3.59 | 4.08 |
| 3-hr | 1.93 | 2.41 | 2.85 | 3.41 | 3.89 | 4.43 |
| 6-hr | 2.26 | 2.82 | 3.33 | 3.99 | 4.56 | 5.19 |
| 12-hr | 2.62 | 3.27 | 3.87 | 4.63 | 5.29 | 6.02 |
| 18-hr | 2.75 | 3.46 | 4.09 | 4.90 | 5.59 | 6.37 |
| 24-hr | 3.02 | 3.76 | 4.45 | 5.32 | 6.08 | 6.92 |
| 48-hr | 3.38 | 4.19 | 4.86 | 5.78 | 6.62 | 7.51 |
| 72-hr | 3.70 | 4.55 | 5.26 | 6.15 | 7.25 | 8.16 |
| 5-day | 4.17 | 5.11 | 5.84 | 6.96 | 7.98 | 9.21 |
| 10-day | 5.12 | 6.27 | 7.10 | 8.19 | 9.10 | 10.18 |

Source: ISWS/BUL-70/89

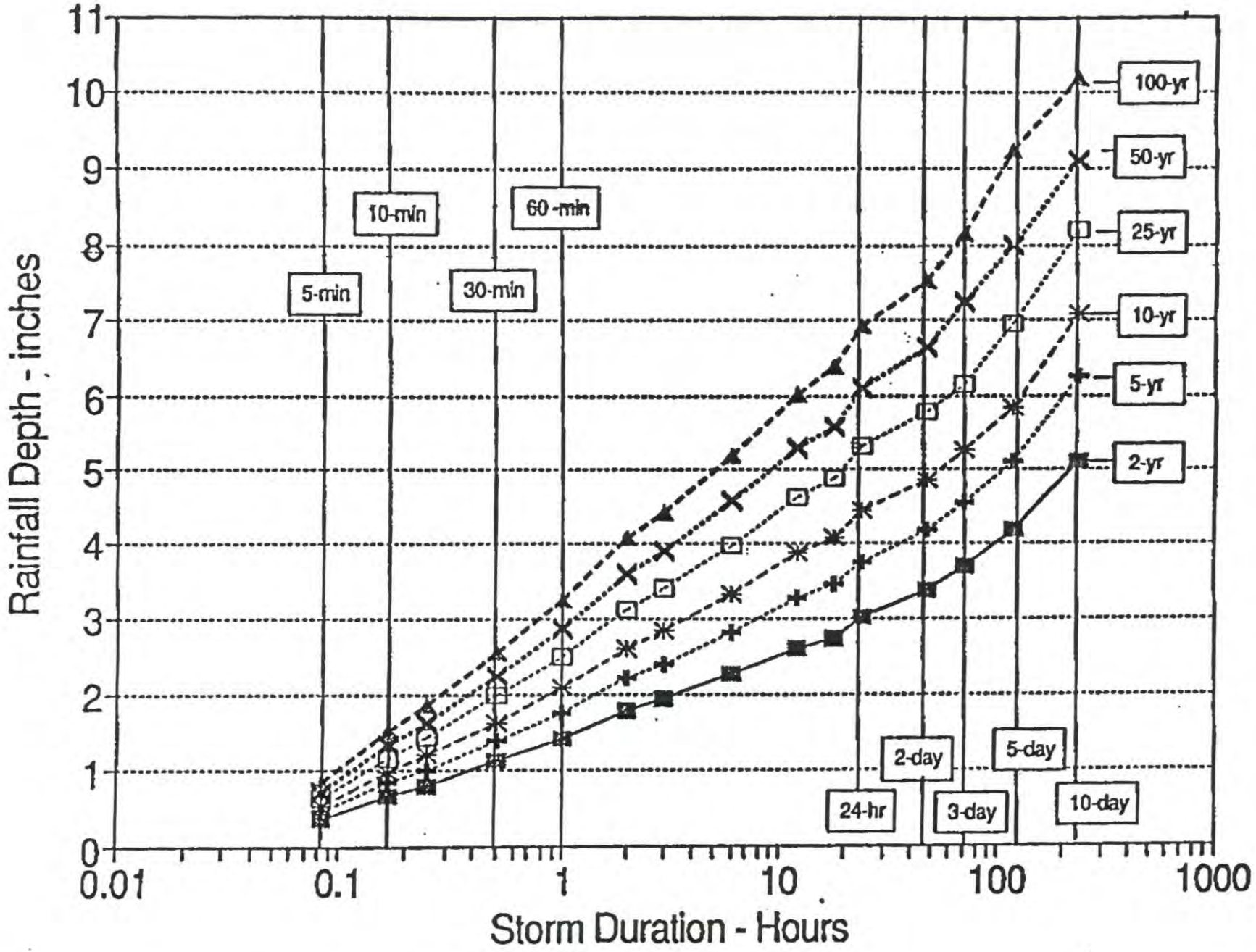



Figure 1. Rainfall Depth-Duration-Frequency Data

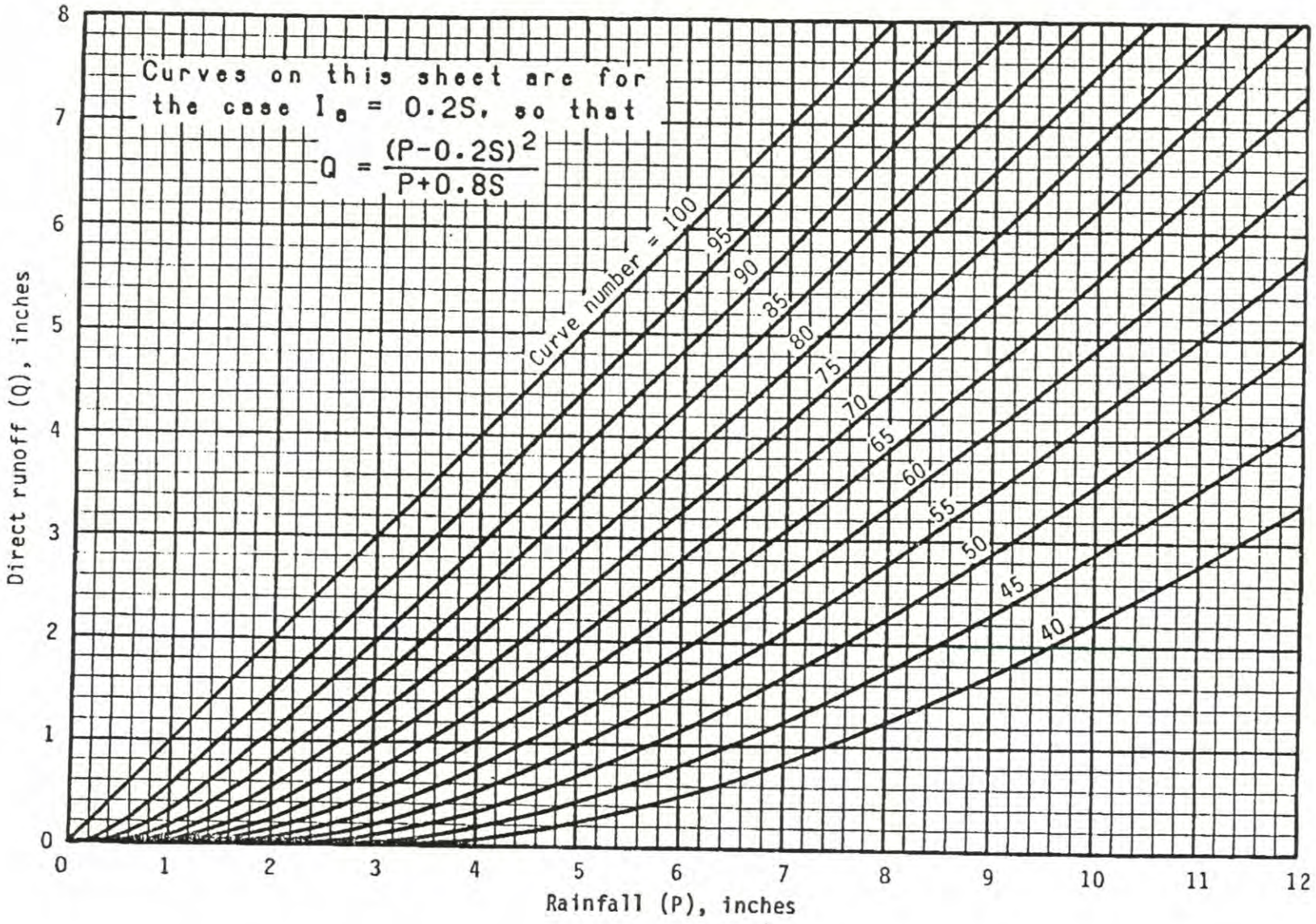



Figure 2-1.—Solution of runoff equation.

# Chapter 2: Estimating runoff

## SCS Runoff Curve Number method

The SCS Runoff Curve Number (CN) method is described in detail in NEH-4 (SCS 1985). The SCS runoff equation is

$$Q = \frac{(P - I_a)^2}{(P - I_a) + S} \qquad \text{[Eq. 2-1]}$$

where

Q = runoff (in),
P = rainfall (in),
S = potential maximum retention after runoff begins (in), and
$I_a$ = initial abstraction (in).

Initial abstraction ($I_a$) is all losses before runoff begins. It includes water retained in surface depressions, water intercepted by vegetation, evaporation, and infiltration. $I_a$ is highly variable but generally is correlated with soil and cover parameters. Through studies of many small agricultural watersheds, $I_a$ was found to be approximated by the following empirical equation:

$$I_a = 0.2S. \qquad \text{[Eq. 2-2]}$$

By removing $I_a$ as an independent parameter, this approximation allows use of a combination of S and P to produce a unique runoff amount. Substituting equation 2-2 into equation 2-1 gives

$$Q = \frac{(P - 0.2S)^2}{(P + 0.8S)}. \qquad \text{[Eq. 2-3]}$$

S is related to the soil and cover conditions of the watershed through the CN. CN has a range of 0 to 100, and S is related to CN by

$$S = \frac{1000}{CN} - 10. \qquad \text{[Eq. 2-4]}$$

Figure 2-1 and table 2-1 solve equations 2-3 and 2-4 for a range of CN's and rainfall.

## Factors considered in determining runoff curve numbers

The major factors that determine CN are the hydrologic soil group (HSG), cover type, treatment, hydrologic condition, and antecedent runoff condition (ARC). Another factor considered is whether impervious areas outlet directly to the drainage system (connected) or whether the flow spreads over pervious areas before entering the drainage system (unconnected). Figure 2-2 is provided to aid in selecting the appropriate figure or table for determining curve numbers.

CN's in table 2-2 (*a* to *d*) represent average antecedent runoff condition for urban, cultivated agricultural, other agricultural, and arid and semiarid rangeland uses. Table 2-2 assumes impervious areas are directly connected. The following sections explain how to determine CN's and how to modify them for urban conditions.

### Hydrologic soil groups

Infiltration rates of soils vary widely and are affected by subsurface permeability as well as surface intake rates. Soils are classified into four HSG's (A, B, C, and D) according to their minimum infiltration rate, which is obtained for bare soil after prolonged wetting. Appendix A defines the four groups and provides a list of most of the soils in the United States and their group classification. The soils in the area of interest may be identified from a soil survey report, which can be obtained from local SCS offices or soil and water conservation district offices.

Most urban areas are only partially covered by impervious surfaces: the soil remains an important factor in runoff estimates. Urbanization has a greater effect on runoff in watersheds with soils having high infiltration rates (sands and gravels) than in watersheds predominantly of silts and clays, which generally have low infiltration rates.

Any disturbance of a soil profile can significantly change its infiltration characteristics. With urbanization, native soil profiles may be mixed or removed or fill material from other areas may be introduced. Therefore, a method based on soil

Table 2-2a.—Runoff curve numbers for urban areas[1]

| Cover description | | Curve numbers for hydrologic soil group— | | | |
|---|---|---|---|---|---|
| Cover type and hydrologic condition | Average percent impervious area[2] | A | B | C | D |
| *Fully developed urban areas (vegetation established)* | | | | | |
| Open space (lawns, parks, golf courses, cemeteries, etc.)[3]: | | | | | |
| Poor condition (grass cover < 50%) | | 68 | 79 | 86 | 89 |
| Fair condition (grass cover 50% to 75%) | | 49 | 69 | 79 | 84 |
| Good condition (grass cover > 75%) | | 39 | 61 | 74 | 80 |
| Impervious areas: | | | | | |
| Paved parking lots, roofs, driveways, etc. (excluding right-of-way) | | 98 | 98 | 98 | 98 |
| Streets and roads: | | | | | |
| Paved; curbs and storm sewers (excluding right-of-way) | | 98 | 98 | 98 | 98 |
| Paved; open ditches (including right-of-way) | | 83 | 89 | 92 | 93 |
| Gravel (including right-of-way) | | 76 | 85 | 89 | 91 |
| Dirt (including right-of-way) | | 72 | 82 | 87 | 89 |
| Western desert urban areas: | | | | | |
| Natural desert landscaping (pervious areas only)[4] | | 63 | 77 | 85 | 88 |
| Artificial desert landscaping (impervious weed barrier, desert shrub with 1- to 2-inch sand or gravel mulch and basin borders) | | 96 | 96 | 96 | 96 |
| Urban districts: | | | | | |
| Commercial and business | 85 | 89 | 92 | 94 | 95 |
| Industrial | 72 | 81 | 88 | 91 | 93 |
| Residential districts by average lot size: | | | | | |
| 1/8 acre or less (town houses) | 65 | 77 | 85 | 90 | 92 |
| 1/4 acre | 38 | 61 | 75 | 83 | 87 |
| 1/3 acre | 30 | 57 | 72 | 81 | 86 |
| 1/2 acre | 25 | 54 | 70 | 80 | 85 |
| 1 acre | 20 | 51 | 68 | 79 | 84 |
| 2 acres | 12 | 46 | 65 | 77 | 82 |
| *Developing urban areas* | | | | | |
| Newly graded areas (pervious areas only, no vegetation)[5] | | 77 | 86 | 91 | 94 |
| Idle lands (CN's are determined using cover types similar to those in table 2-2c). | | | | | |

[1]Average runoff condition, and $I_a = 0.2S$.
[2]The average percent impervious area shown was used to develop the composite CN's. Other assumptions are as follows: impervious areas are directly connected to the drainage system, impervious areas have a CN of 98, and pervious areas are considered equivalent to open space in good hydrologic condition. CN's for other combinations of conditions may be computed using figure 2-3 or 2-4.
[3]CN's shown are equivalent to those of pasture. Composite CN's may be computed for other combinations of open space cover type.
[4]Composite CN's for natural desert landscaping should be computed using figures 2-3 or 2-4 based on the impervious area percentage (CN = 98) and the pervious area CN. The pervious area CN's are assumed equivalent to desert shrub in poor hydrologic condition.
[5]Composite CN's to use for the design of temporary measures during grading and construction should be computed using figure 2-3 or 2-4, based on the degree of development (impervious area percentage) and the CN's for the newly graded pervious areas.

Table 2-2b.—Runoff curve numbers for cultivated agricultural lands[1]

| Cover description | | | Curve numbers for hydrologic soil group— | | | |
|---|---|---|---|---|---|---|
| Cover type | Treatment[2] | Hydrologic condition[3] | A | B | C | D |
| Fallow | Bare soil | — | 77 | 86 | 91 | 94 |
| | Crop residue cover (CR) | Poor | 76 | 85 | 90 | 93 |
| | | Good | 74 | 83 | 88 | 90 |
| Row crops | Straight row (SR) | Poor | 72 | 81 | 88 | 91 |
| | | Good | 67 | 78 | 85 | 89 |
| | SR + CR | Poor | 71 | 80 | 87 | 90 |
| | | Good | 64 | 75 | 82 | 85 |
| | Contoured (C) | Poor | 70 | 79 | 84 | 88 |
| | | Good | 65 | 75 | 82 | 86 |
| | C + CR | Poor | 69 | 78 | 83 | 87 |
| | | Good | 64 | 74 | 81 | 85 |
| | Contoured & terraced (C&T) | Poor | 66 | 74 | 80 | 82 |
| | | Good | 62 | 71 | 78 | 81 |
| | C&T + CR | Poor | 65 | 73 | 79 | 81 |
| | | Good | 61 | 70 | 77 | 80 |
| Small grain | SR | Poor | 65 | 76 | 84 | 88 |
| | | Good | 63 | 75 | 83 | 87 |
| | SR + CR | Poor | 64 | 75 | 83 | 86 |
| | | Good | 60 | 72 | 80 | 84 |
| | C | Poor | 63 | 74 | 82 | 85 |
| | | Good | 61 | 73 | 81 | 84 |
| | C + CR | Poor | 62 | 73 | 81 | 84 |
| | | Good | 60 | 72 | 80 | 83 |
| | C&T | Poor | 61 | 72 | 79 | 82 |
| | | Good | 59 | 70 | 78 | 81 |
| | C&T + CR | Poor | 60 | 71 | 78 | 81 |
| | | Good | 58 | 69 | 77 | 80 |
| Close-seeded or broadcast legumes or rotation meadow | SR | Poor | 66 | 77 | 85 | 89 |
| | | Good | 58 | 72 | 81 | 85 |
| | C | Poor | 64 | 75 | 83 | 85 |
| | | Good | 55 | 69 | 78 | 83 |
| | C&T | Poor | 63 | 73 | 80 | 83 |
| | | Good | 51 | 67 | 76 | 80 |

[1]Average runoff condition, and $I_a = 0.2S$.

[2]*Crop residue cover* applies only if residue is on at least 5% of the surface throughout the year.

[3]Hydrologic condition is based on combination of factors that affect infiltration and runoff, including (a) density and canopy of vegetative areas, (b) amount of year-round cover, (c) amount of grass or close-seeded legumes in rotations, (d) percent of residue cover on the land surface (good ≥ 20%), and (e) degree of surface roughness.

*Poor*: Factors impair infiltration and tend to increase runoff.

*Good*: Factors encourage average and better than average infiltration and tend to decrease runoff.

Table 2-2c.—Runoff curve numbers for other agricultural lands[1]

| Cover description | | Curve numbers for hydrologic soil group— | | | |
|---|---|---|---|---|---|
| Cover type | Hydrologic condition | A | B | C | D |
| Pasture, grassland, or range—continuous forage for grazing.[2] | Poor | 68 | 79 | 86 | 89 |
| | Fair | 49 | 69 | 79 | 84 |
| | Good | 39 | 61 | 74 | 80 |
| Meadow—continuous grass, protected from grazing and generally mowed for hay. | — | 30 | 58 | 71 | 78 |
| Brush—brush-weed-grass mixture with brush the major element.[3] | Poor | 48 | 67 | 77 | 83 |
| | Fair | 35 | 56 | 70 | 77 |
| | Good | [4]30 | 48 | 65 | 73 |
| Woods—grass combination (orchard or tree farm).[5] | Poor | 57 | 73 | 82 | 86 |
| | Fair | 43 | 65 | 76 | 82 |
| | Good | 32 | 58 | 72 | 79 |
| Woods.[6] | Poor | 45 | 66 | 77 | 83 |
| | Fair | 36 | 60 | 73 | 79 |
| | Good | [4]30 | 55 | 70 | 77 |
| Farmsteads—buildings, lanes, driveways, and surrounding lots. | — | 59 | 74 | 82 | 86 |

[1]Average runoff condition, and $I_a = 0.2S$.

[2]*Poor:* <50% ground cover or heavily grazed with no mulch.
*Fair:* 50 to 75% ground cover and not heavily grazed.
*Good:* >75% ground cover and lightly or only occasionally grazed.

[3]*Poor:* <50% ground cover.
*Fair:* 50 to 75% ground cover.
*Good:* >75% ground cover.

[4]Actual curve number is less than 30; use CN = 30 for runoff computations.

[5]CN's shown were computed for areas with 50% woods and 50% grass (pasture) cover. Other combinations of conditions may be computed from the CN's for woods and pasture.

[6]*Poor:* Forest litter, small trees, and brush are destroyed by heavy grazing or regular burning.
*Fair:* Woods are grazed but not burned, and some forest litter covers the soil.
*Good:* Woods are protected from grazing, and litter and brush adequately cover the soil.

Table 3. SCS Type II Rainfall Distribution

| Time | | Fraction of Total Rainfall |
|---|---|---|
| Hour | Fraction of Total | |
| 0.50 | 0.021 | 0.005 |
| 1.00 | 0.042 | 0.011 |
| 1.50 | 0.063 | 0.017 |
| 2.00 | 0.083 | 0.023 |
| 2.50 | 0.104 | 0.029 |
| 3.00 | 0.125 | 0.035 |
| 3.50 | 0.146 | 0.042 |
| 4.00 | 0.167 | 0.049 |
| 4.50 | 0.188 | 0.056 |
| 5.00 | 0.208 | 0.064 |
| 5.50 | 0.229 | 0.072 |
| 6.00 | 0.250 | 0.080 |
| 6.50 | 0.271 | 0.090 |
| 7.00 | 0.292 | 0.100 |
| 7.50 | 0.313 | 0.110 |
| 8.00 | 0.333 | 0.120 |
| 8.50 | 0.354 | 0.134 |
| 9.00 | 0.375 | 0.147 |
| 9.50 | 0.396 | 0.163 |
| 10.00 | 0.417 | 0.181 |
| 10.50 | 0.438 | 0.204 |
| 11.00 | 0.458 | 0.235 |
| 11.25 | 0.468 | 0.260 |
| 11.50 | 0.479 | 0.300 |
| 11.75 | 0.490 | 0.420 |
| 12.00 | 0.500 | 0.663 |
| 12.25 | 0.510 | 0.710 |
| 12.50 | 0.521 | 0.735 |
| 13.00 | 0.542 | 0.772 |
| 13.50 | 0.563 | 0.799 |
| 14.00 | 0.583 | 0.820 |
| 14.50 | 0.604 | 0.835 |
| 15.00 | 0.625 | 0.850 |
| 15.50 | 0.646 | 0.865 |
| 16.00 | 0.667 | 0.880 |
| 16.50 | 0.688 | 0.889 |
| 17.00 | 0.708 | 0.898 |
| 17.50 | 0.729 | 0.907 |
| 18.00 | 0.750 | 0.916 |
| 18.50 | 0.771 | 0.925 |
| 19.00 | 0.792 | 0.934 |
| 19.50 | 0.813 | 0.943 |
| 20.00 | 0.833 | 0.952 |
| 20.50 | 0.854 | 0.958 |
| 21.00 | 0.875 | 0.964 |
| 21.50 | 0.896 | 0.970 |
| 22.00 | 0.917 | 0.976 |
| 22.50 | 0.938 | 0.982 |
| 23.00 | 0.958 | 0.988 |
| 23.50 | 0.979 | 0.994 |
| 24.00 | 1.000 | 1.000 |

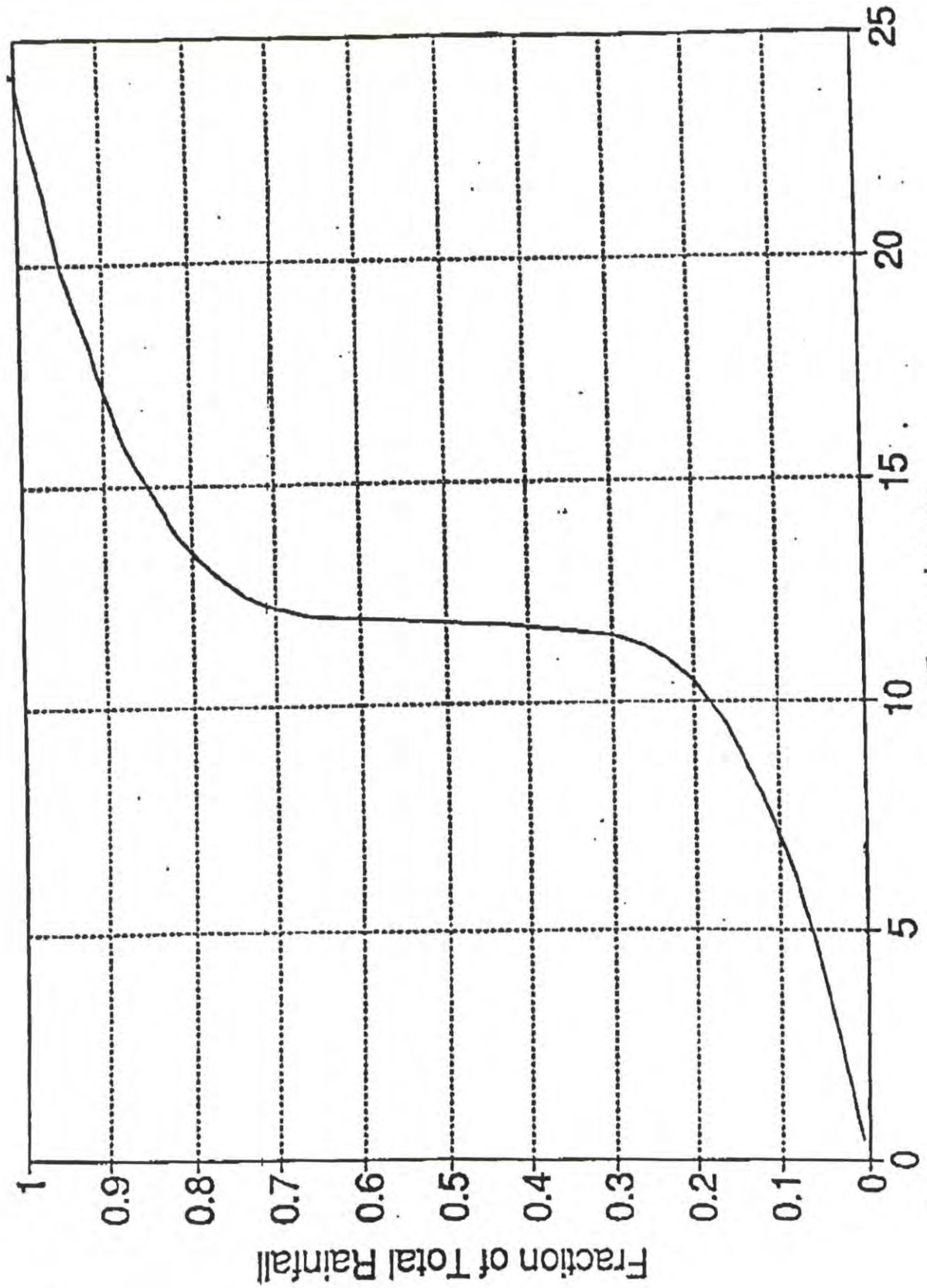



Figure 3. SCS Type II Storm Distribution

# COMPUTATION SHEET
# FOR 2-STAGE DETENTION BASIN OUTLET DESIGN

(to be used with TR 55 worksheet 6a or computer printout for storage routing)

Project Name: _____ Structure ID: _____ Date: _____

Note: attach TR 55 worksheet 6a or computer printout with basin routing information

**FIRST STAGE**

Maximum stage for 2-year storm ($E_{2\text{-}yr}$) = _____ ft

First stage control elevation ($E_1$) = _____ ft

Head on first stage structure ($H_{2\text{-}yr} = E_{2\text{-}yr} - E_1$) _____ ft

Allowable discharge for 2-yr storm ($q_{2\text{-}yr}$) = _____ cfs

For rectangular weir outlet:

Required weir length $L_1 = q_{2\text{-}yr} / (3.2 * H_{2\text{-}yr}^{1.5})$

____ / (3.2 * ____$^{1.5}$) = _____ ft

For orifice outlet:

Required orifice area $A_1 = q_{2\text{-}yr} / (4.98 * H_{2\text{-}yr}^{0.5})$

= ____ / (4.98 * ____$^{0.5}$) = _____ sq ft

**SECOND STAGE**

Maximum stage for 25-year storm ($E_{25\text{-}yr}$) = _____ ft

Second stage control elevation ($E_2$) = _____ ft

Head on second stage structure ($H_{25\text{-}yr} = E_{25\text{-}yr} - E_2$) _____ ft

Allowable discharge for 25-yr storm ($q_{25\text{-}yr}$) = _____ cfs

25-yr Storm Discharge through first stage:

Weir: $q' = 3.2 * L_1 * (E_{25\text{-}yr} - E_1)^{1.5} = 3.2 *$ _____ *(_____ - _____)$^{1.5}$

= _____ cfs

Orifice: $q' = 4.98 * A_1 * (E_{25\text{-}yr} - E_1)^{0.5} = 4.98 *$ _____ *(_____ - _____)$^{0.5}$

= _____ cfs

Allowable discharge through second stage ($q''$) = $q_{25\text{-}yr} - q'$ = _____ cfs

For rectangular weir outlet:

Required weir length $L_2 = q'' / (3.2 * H_{25\text{-}yr}^{1.5})$

= ____ / (3.2 * ____$^{1.5}$) = _____ ft

For orifice outlet:

Required orifice area $A_2 = q'' / (4.98 * H_{25\text{-}yr}^{0.5})$

= ____ / (4.98 * ____$^{0.5}$) = _____ sq ft

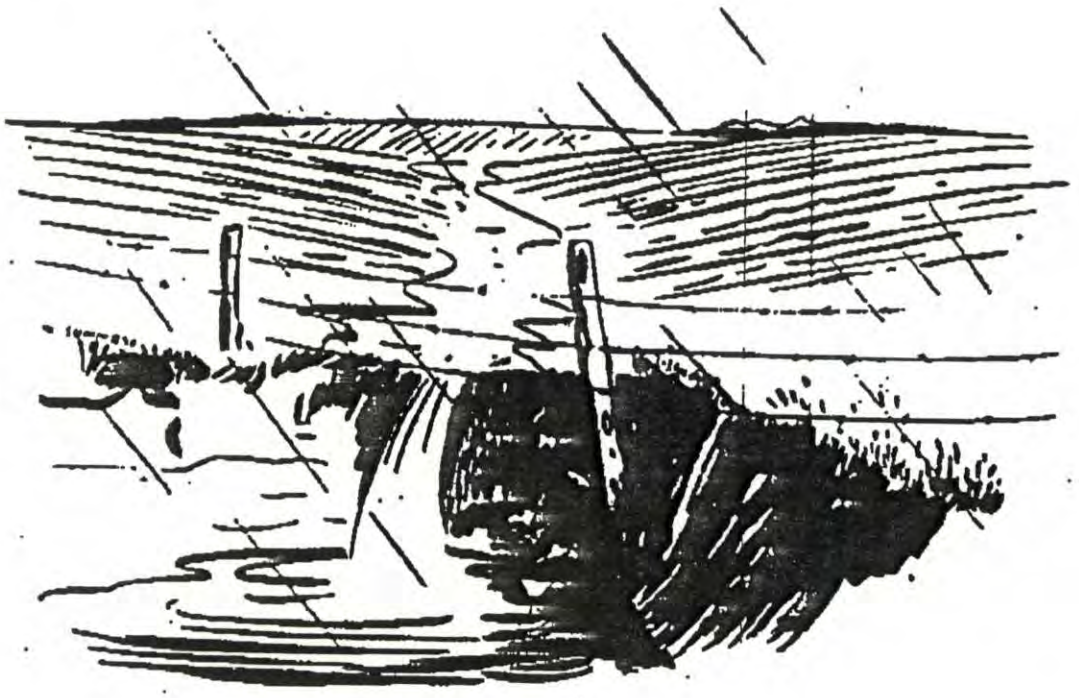
Illinois
Environmental
Protection Agency

Division of Water Pollution Control
2200 Churchill Road
Springfield, Illinois 62794-9276

October 1987

IEPA/WPC/87-012

# ILLINOIS ENVIRONMENTAL PROTECTION AGENCY



## Standards and Specifications For Soil Erosion and Sediment Control

## 1987

OCT 06 '94 09:44 TRICOUNTYREGPLAN 3092666807 TO: 13096726079 P08

# TAZEWELL COUNTY, ILLINOIS

# EROSION, SEDIMENT AND STORM WATER CONTROL ORDINANCE

## APPENDIX "B"

There are three ways to accomplish urban soil erosion and sedimentation control:

- Allow erosion to take place and then control sediment before it leaves a site.
- Stop erosion in the watershed (project area), by soil stabilization or runoff control measures.
- A combination of the two. (most desirable)

The following is a list of common measures that can be used to control erosion and sediment. It is by no means an exhaustive list. Some standard drawings are included in this appendix, and are referenced with the Appendix page numbers. Additional drawings, standards and specifications can be found in the Illinois Urban Manual, IEPA and USDA, NRCS, 1995 and the Illinois Standards for Urban Soil Erosion and Sediment Control, The Urban Committee of the Association of Illinois Soil and Water Conservation Districts, Revised July 1988.

## SEDIMENT CONTROL

### A PERIMETER SEDIMENT CONTROL MEASURES:

to be installed between disturbed areas (including stockpiles) and property lines or drainage ways in order to protect off-site areas. Control measures should be installed on the down-slope sides of the disturbed areas where runoff will leave the site.

| Slope Range | Control Measure | Comments |
|---|---|---|
| **less than 2%** | vegetative (grass) filter strips<br>no minimum width requirement | |
| **2% to <5 %** | vegetative (grass) filter strips<br>10' wide, minimum | size should be increased in proportion to the drainage area and slope |
| | filter fence *(page B-3) | drainage area less than 1/2 ac per 100 ft.; see standard for spacing criteria |
| | straw bales *(page B-4) | for use in small drainage areas; see standard for spacing criteria; maximum life is 3 months |
| | vegetative buffer area (other than grass), about 50' wide, minimum | minimizing disturbed areas is desirable; increase buffer size in proportion to drainage area and slope. |
| | sediment basin | can handle sediment from a larger area |
| **5% to <10 %** | vegetative (grass) filter strips<br>20' wide, minimum | size should be increased in proportion to the drainage area and slope |
| | filter fence (page B-3) | drainage area less than 1/2 ac per 100 ft.; see standard for spacing criteria |
| | straw bales (page B-4) | for use in small drainage areas; see standard for spacing criteria; maximum life is 3 months |
| | vegetative buffer area (other than grass), about 100' wide, minimum | minimizing disturbed areas is desirable; increase buffer size in proportion to drainage area and slope. |
| | sediment basin | can handle sediment from a larger area |
| **>10%** | filter fence (page B-3) | drainage area less than 1/2 ac per 100 ft.; see standard for spacing criteria |
| | sediment basin | can handle sediment from a larger area |

B INLET SEDIMENT CONTROL:
to be installed around storm sewer or other inlets to prevent sediment from entering the system. There are many different types depending on the type of inlet.
Common measures include:
Inlet Protection — Excavated Drain (page B-5)
Inlet Protection — Block and Gravel (page B-6)
Inlet Protection — Staked Straw Bales

C MUD AND DUST CONTROL:
to prevent mud and dust from leaving the site.
Common measures include:
Stabilized Construction Entrance (page B-7)
Dust control, see the standards and specifications.

## RUNOFF CONTROL

A CONCENTRATED FLOW AREAS:
Temporary erosion control measures should be installed to protect drainage ways such as road ditches and waterways until the area is permanently stabilized.
Common measures include:
Rock Checks for Waterways (page B-9 and B-10)
Fabric Checks for Waterways (pages B-11 and B-12)
Erosion Blanket

B OUTLET PROTECTION:
All outlets should be stabilized to prevent downstream areas from erosion.
Common measures include:
Pipe Outlet to Channel (page B-13)
Pipe Outlet to Flat Area

C DIVERSIONS:
Surface runoff from adjacent areas should be diverted around disturbed areas to stable outlets to reduce erosion due to surface runoff.

## SOIL STABILIZATION

**Recommended seeding dates for Central Illinois are shown in bold.**

A VEGETATIVE SOIL COVER:

1 Temporary Seeding: Provides a temporary quick cover to control erosion when permanent seeding is not desired or the time of year is inappropriate. **[Early Spring — September 30th]**

2 Permanent Seeding: Provides permanent vegetative cover to control erosion, filters sediment from water. May be part of final landscaping plan. **[Spring seeding: Early Spring — May 15]** **[Fall seeding: August 1 — September 10]**

3 Dormant seeding: Same as permanent seeding except seeding is done during dormant season. Higher rates of seed application are required. If no mulch is applied, then perimeter controls should be maintained until the vegetation is established. **[November 15th — March 1st]**

4 Sodding: Quick, permanent cover to control erosion. Quick way to establish vegetative filter strip. Can be used on steep slopes or in drainage ways where seeding may be difficult. **[Anytime, except when the ground is frozen]**

5 Ground Cover: Provides ground cover, shrubs and trees in addition to permanent vegetation. May be used as part of a final landscape plan along with shrubs and trees.

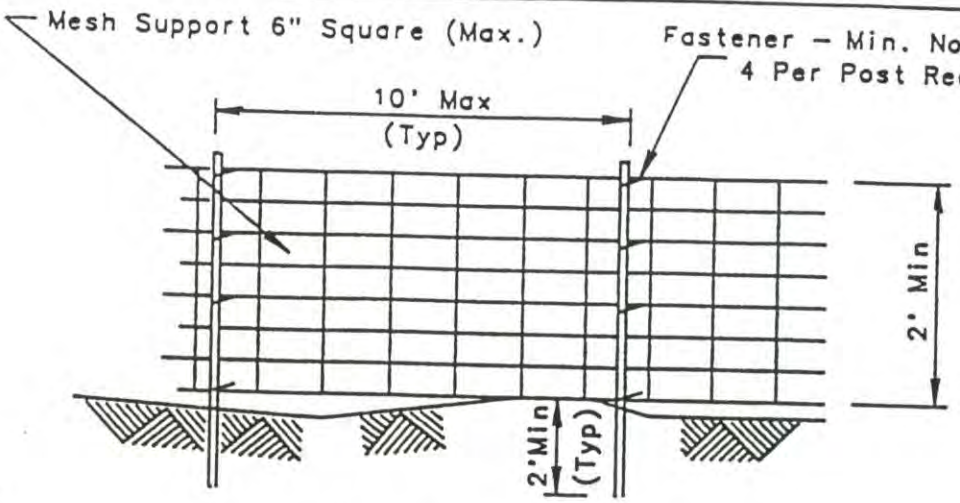
B NON-VEGETATIVE SOIL COVER:

1 Mulching: Added insurance of a successful temporary or permanent seeding. Controls unwanted vegetation and preserves moisture. Provides cover where vegetation cannot be established.

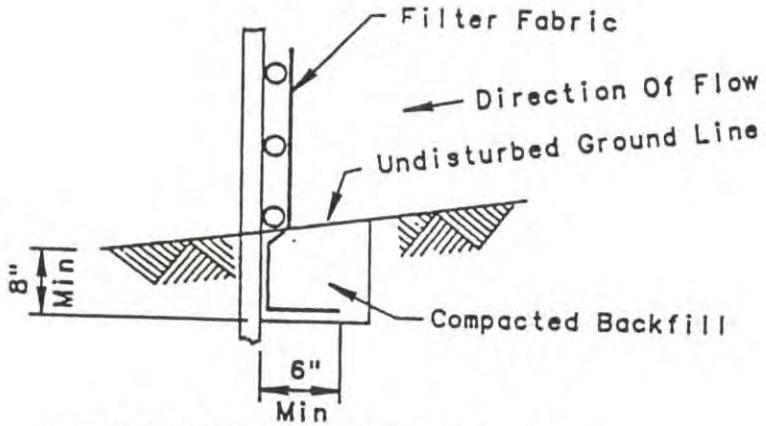
2 Aggregate cover: Provides soil cover on roads and parking lots and areas where vegetation cannot be established. Prevents mud from being picked up and transported off site.

3 Paving: Provides permanent cover on parking lots, roads or other areas where vegetation cannot be established.

# SILT FENCE PLAN




ELEVATION



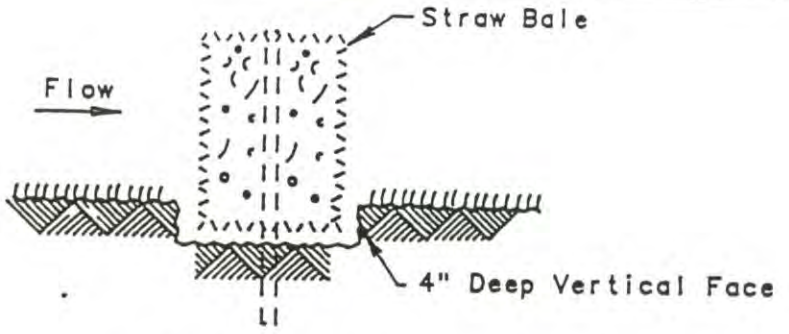

FABRIC ANCHOR DETAIL

NOTES:

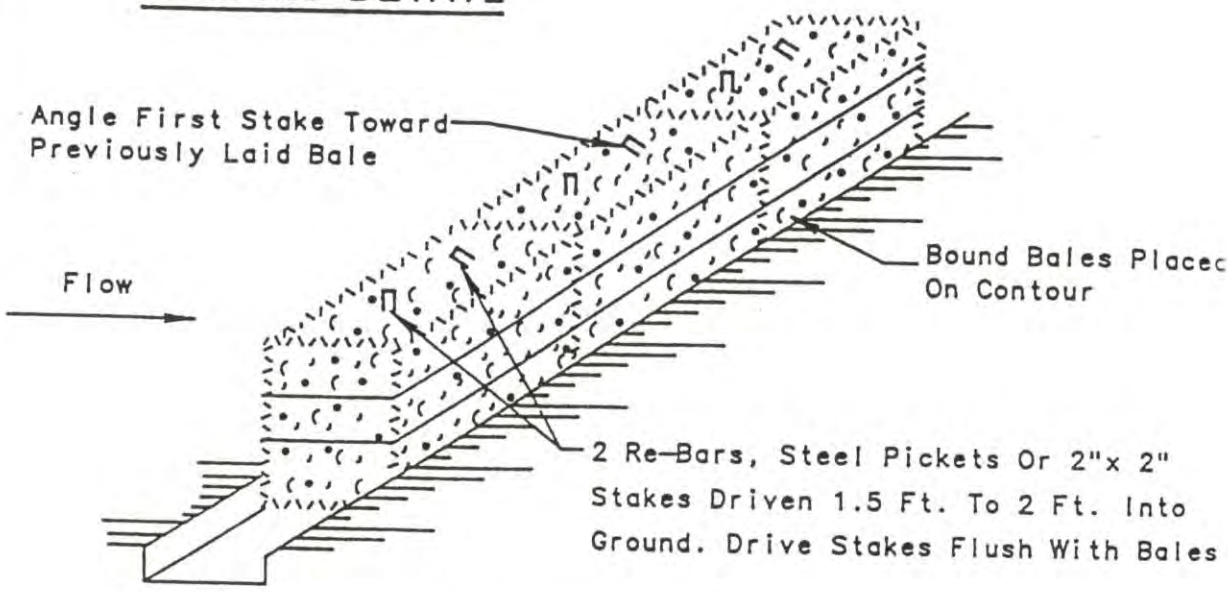
1. Top and bottom wires of mesh support shall be min. gage no.9.
2. Intermediate wires of mesh supports shall be min. gage no. 11.
3. Temporary sediment fence shall be installed prior to any grading work in the area to be protected. They shall be maintained throughout the construction period and removed in conjunction with the final grading.
4. Filter fabric shall meet the requirements of material specification 592 Geotextile Table 1 or 2, Class I with equivalent opening size of at least 30 for nonwoven and 50 for woven.
5. Fence post shall be either standard steel post or wood post with a minmum sectional area 3.0 sq.in.
6. The mesh support may be omitted if a maximum of 5' is used for post post spacing.

| REFERENCE | | | |
|---|---|---|---|
| Project | | U.S. DEPARTMENT OF AGRICULTURE | STANDARD DWG. NO. |
| Designed | Date | SOIL CONSERVATION SERVICE | IL-620 |
| Checked | Date | ILLINOIS | SHEET 1 OF 1 |
| Approved | Date | | DATE 3-3-05 |

# STRAW BALE BARRIER PLAN




## BEDDING DETAIL



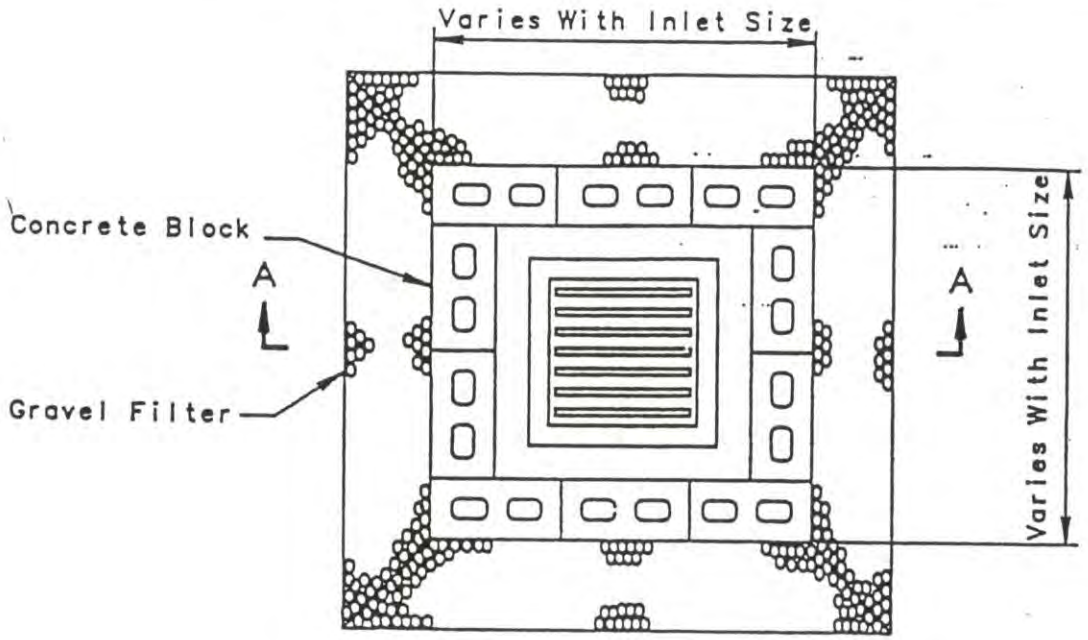

## ANCHORING DETAIL

NOTES

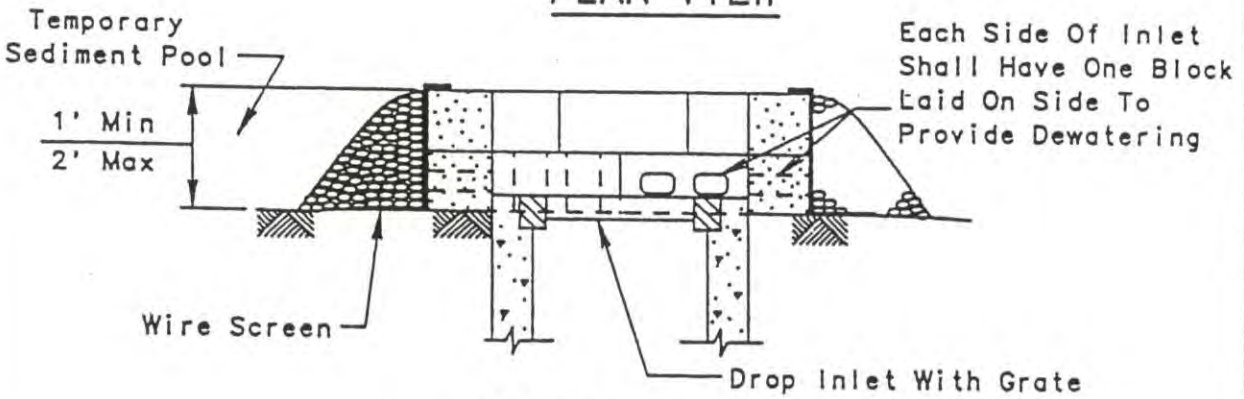
1. Bales shall be placed at the top of slope or on the contour and in a row with ends tightly abutting the adjacent bales.
2. Each bale shall be embedded in the soil a minimum of 4", and placed so that bindings are horizontal.
3. Bales shall be securely anchored in place by either two stakes or re-bars driven through the bale. The first stake in each bale shall be driven toward the previously laid bale at an angle to force the bales together. Stakes shall be driven flush with the bale.
4. Inspection shall be frequent and repair replacement shall be made promptly as needed.
5. Bales shall be removed when they have served their usefulness so as not to block or impede storm flow or drainage.

| | | |
|---|---|---|
| REFERENCE<br>Project _____<br>Designed _____ Date _____<br>Checked _____ Date _____<br>Approved _____ Date _____ | U.S. DEPARTMENT OF AGRICULTURE<br>SOIL CONSERVATION SERVICE<br>ILLINOIS | STANDARD DWG. NO.<br>IL-635<br>SHEET 1 OF 1<br>DATE 8-18-94 |

# INLET PROTECTION - BLOCK AND GRAVEL PLAN




PLAN VIEW



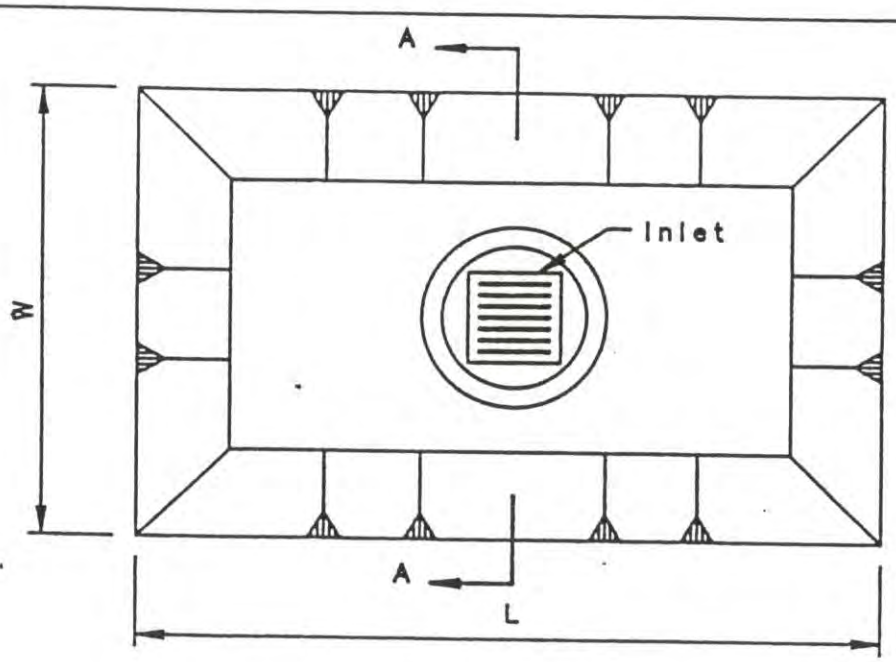

SECTION A–A

NOTES:

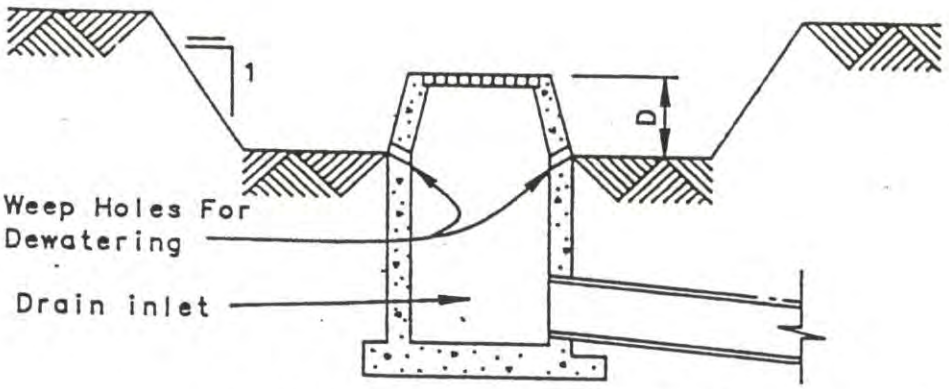
1. Sediment shall be removed and the trap restored to its original dimensions when the sediment has accumulated to 1/2 the design depth. Removed sediment shall be deposited in a suitable area and in such a manner that it will not erode.
2. The sediment trap shall be removed and the area stabilized when the constructed drainage area has been properly stabilized.
3. The wire screen shall be hardware cloth or comparable wire wesh with 1/2 inch openings.
4. The gravel shall meet requirements for coarse aggregate with IDOT gradations of CA–1, CA–2 or CA–3.

| REFERENCE | | | |
|---|---|---|---|
| Project | | | |
| Designed | Date | U.S. DEPARTMENT OF AGRICULTURE | STANDARD DWG. NO. |
| Checked | Date | SOIL CONSERVATION SERVICE | IL-550 |
| Approved | Date | ILLINOIS | SHEET 1 OF 1 |
| | | | DATE 8–17–94 |

# INLET PROTECTION - EXCAVATED DRAIN PLAN




PLAN VIEW



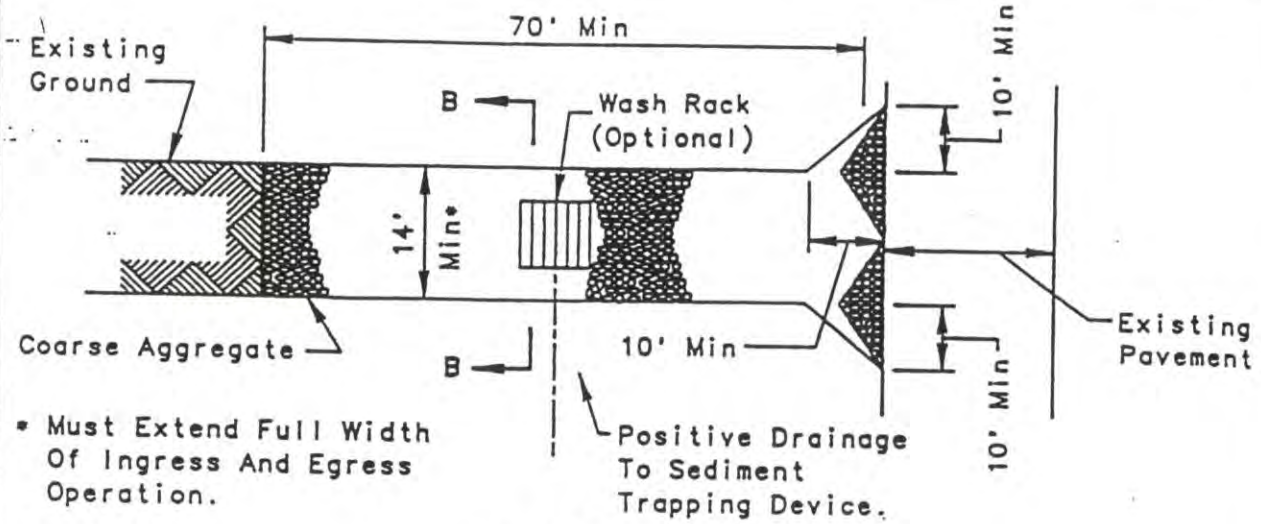

TYPICAL SECTION A–A

NOTES:

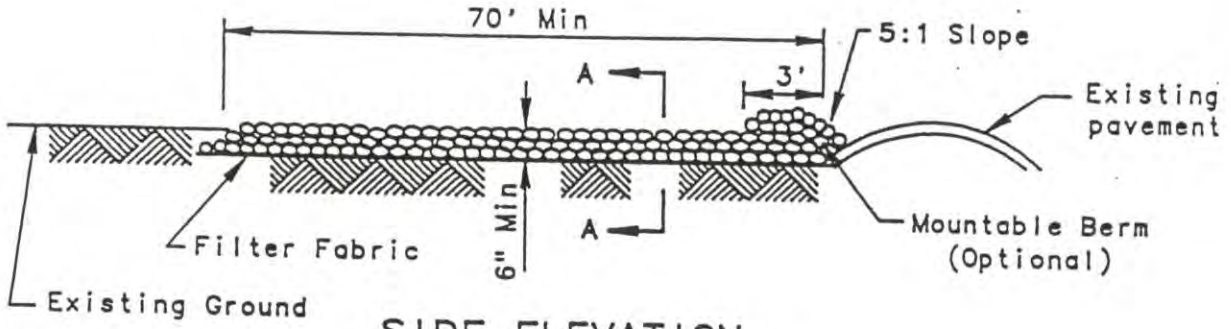
1. Sediment shall be removed and the trap restored to its original dimensions when the sediment has accumulated to 1/2 the design depth of the trap. Removed sediment shall be deposited in a suitable area and in such a manner that it will not erode.
2. The sediment trap shall be removed and the area stabilized when the constructed drainage area has been properly stabilized.
3. All cut slopes shall be 2:1 or flatter.

| REFERENCE | | | |
|---|---|---|---|
| Project | | U.S. DEPARTMENT OF AGRICULTURE<br>SOIL CONSERVATION SERVICE<br>ILLINOIS | STANDARD DWG. NO.<br>IL-555<br>SHEET 1 OF 1<br>DATE 3-11-93 |
| Designed | Date | | |
| Checked | Date | | |
| Approved | Date | | |

# STABILIZED CONSTRUCTION ENTRANCE PLAN




PLAN VIEW



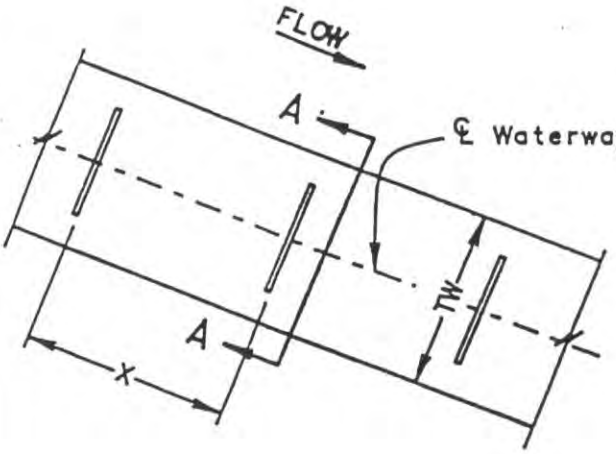

SIDE ELEVATION

NOTES:

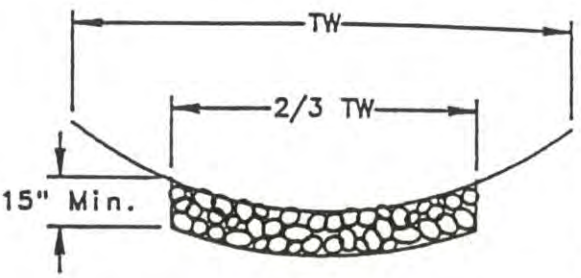
1. Filter fabric shall meet the requirements of material specification 592 GEOTEXTILE, Table I or 2, Class I, II or IV and shall be placed over the cleared area prior to the placing of rock.
2. Rock or reclaimed concrete shll meet one of the following IDOT coarse aggregate gradation, CA–1, CA–2, CA–3 or CA–4 and be placed according to construction specification 25 ROCKFILL using placement Method 1 and Class III compaction.
3. Any drainage facilities required because of washing shall be constructed according to manufacturers specifications.
4. If wash racks are used they shall be installed according to the manufactures specifications.

| REFERENCE | | | |
|---|---|---|---|
| Project | | U.S. DEPARTMENT OF AGRICULTURE | STANDARD DWG. NO. |
| Designed | Date | SOIL CONSERVATION SERVICE | IL-630 |
| Checked | Date | ILLINOIS | SHEET 1 OF 2 |
| Approved | Date | | DATE 8-18-94 |

# ROCK CHECKS FOR WATERWAYS




PLAN VIEW




SECTION A–A

| | | | |
|---|---|---|---|
| WATERWAY NUMBER .... | _____ | _____ | _____ |
| FROM STATION ..... | _____ | _____ | _____ |
| TO STATION ..... | _____ | _____ | _____ |
| CHECK SPACING (X) .. | _____ | _____ | _____ |
| CHECK WIDTH (2/3 TW) | _____ | _____ | _____ |

**BILL OF MATERIALS**

Rock – IDOT RR3, or equivalent – _____ Tons

NOTES:

1. Excavate trench 12 inches wide or one backhoe bucket wide, whichever is greater.
2. Compact rock backfill by rolling with construction equipment.
3. Finished rock surface will be flush with the ground surface when completed.

LOCATION PLAN

County _____

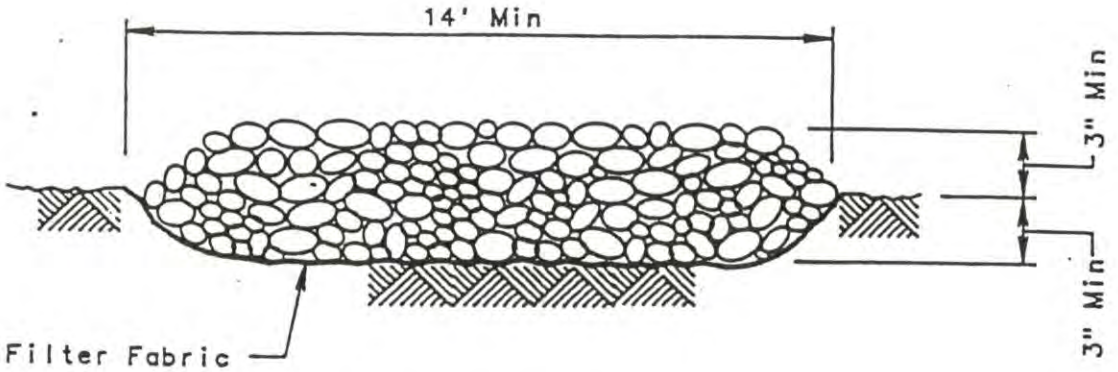
Sec. ____ T ____ R ____

REFERENCE
Project _____
Designed _____ Date _____
Checked _____ Date _____
Approved _____ Date _____

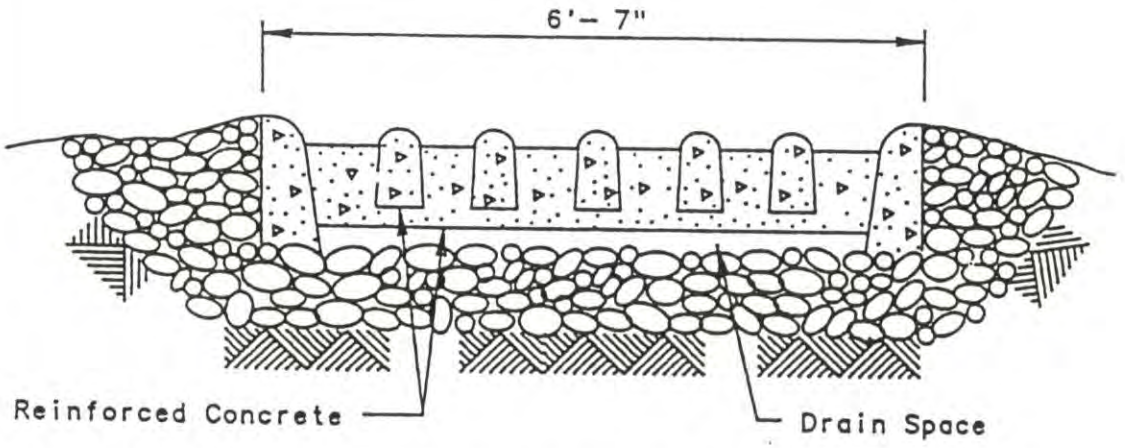
U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
ILLINOIS

STANDARD DWG. NO.
IL-541
SHEET 1 OF 2
DATE 8-17-94

# STABILIZED CONSTRUCTION ENTRANCE PLAN




SECTION A–A




SECTION B–B

| | | |
|---|---|---|
| REFERENCE<br>Project _____<br>Designed _____ Date _____<br>Checked _____ Date _____<br>Approved _____ Date _____ | U.S. DEPARTMENT OF AGRICULTURE<br>SOIL CONSERVATION SERVICE<br>ILLINOIS | STANDARD DWG. NO.<br>IL-630<br>SHEET 2 OF 2<br>DATE 8–18–94 |

# ROCK CHECKS FOR WATERWAYS

## ROCK CHECK SPACING

| WATERWAY GRADE % | MAXIMUM SPACING FT. |
|---|---|
| 0 – 1.5 | 100 |
| 1.5 – 3.0 | 75 |
| > 3.0 | 50 |

## ROCK QUANTITIES IN TONS – PER ROCK CHECK

| DEPTH (In.) | ROCK CHECK WIDTH – 2/3 TW – IN FEET | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 10 | 12 | 14 | 16 | 18 | 20 | 22 | 24 | 26 | 28 | 30 |
| 15 | 1.5 | 1.8 | 2.1 | 2.4 | 2.7 | 3.0 | 3.3 | 3.6 | 3.9 | 4.1 | 4.4 |
| 18 | 1.8 | 2.1 | 2.5 | 2.8 | 3.2 | 3.6 | 3.9 | 4.3 | 4.6 | 5.0 | 5.3 |
| 24 | 2.4 | 2.8 | 3.3 | 3.8 | 4.3 | 4.7 | 5.2 | 5.7 | 6.2 | 6.6 | 7.1 |

Note: Quantities based on 2 foot wide trench and 1.6 Tons/Cu. Yd.
(Divide quantities by 2 for 12 inch trench widths.)

## ROCK GRADATION – IDOT RR3

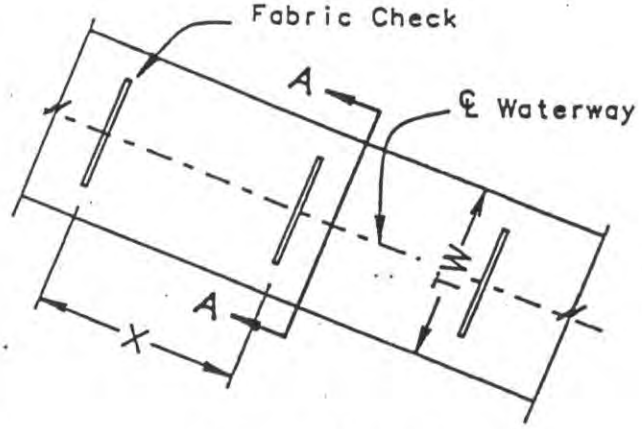
| Size | % Passing By Weight |
|---|---|
| 50 Lb. | 100 |
| 10 Lb. | 30 – 70 |
| 1 Lb. | 0 – 16 |

REFERENCE
Project _____
Designed _____ Date _____
Checked _____ Date _____
Approved _____ Date _____

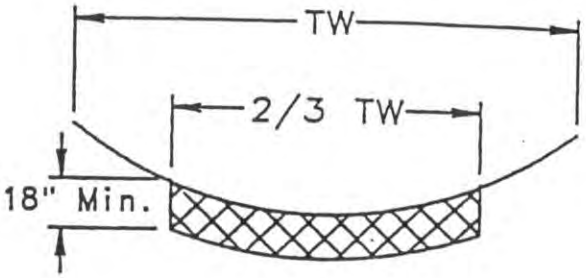
U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
ILLINOIS

STANDARD DWG. NO.
IL-541
SHEET 2 OF 2
DATE 8-17-94

# FABRIC CHECKS FOR WATERWAYS




PLAN VIEW

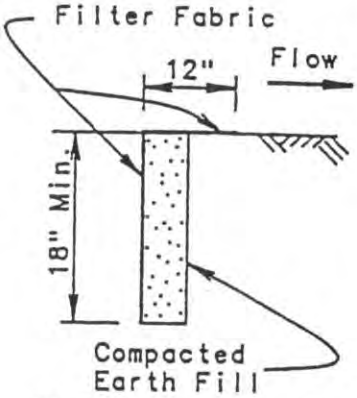



SECTION A–A

| | | | |
|---|---|---|---|
| WATERWAY NUMBER .... | | | |
| FROM STATION ..... | | | |
| TO STATION ..... | | | |
| CHECK SPACING (X) .. | | | |
| CHECK WIDTH (2/3 TW) | | | |

BILL OF MATERIALS

Filter Fabric ___ Sq. Yds.
(___ Pieces, ◎ ___ In. x 30 In.)




TYPICAL SECTION

NOTES:

1. Excavate a trench 18 inches deep, wide enough to allow hand compaction of backfill.
2. Place the fabric against the upstream wall of the trench. Backfill the trench in hand compacted, 6 inch lifts. Lay 12 inch fabric flap downstream.

LOCATION PLAN

County _____

Sec. ____ T ____ R ____

| REFERENCE | | | |
|---|---|---|---|
| Project | | | |
| Designed | | Date | |
| Checked | | Date | |
| Approved | | Date | |

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
ILLINOIS

STANDARD DWG. NO.
IL-542
SHEET 1 OF 2
DATE 8-17-94