

***SUBDIVISION CONTROL***

***PROCEDURES***

***Pursuant to Act 288 of 1967, as Amended***



**CLINTON COUNTY DRAIN COMMISSIONER**

100 E. State Street, Suite 2300  
St. Johns, MI 48879  
(989) 224-5160  
FAX (989) 224-5102

The Design Standards contained herein shall apply to all commercial and industrial site development within the County of Clinton.

**CLINTON COUNTY DRAIN COMMISSIONER**

**RULES FOR INTERNAL & EXTERNAL  
DRAINAGE FOR SUBDIVISIONS**

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The Subdivision Control Act requires the County Drain Commissioner to publish rules governing the internal and external drainage of proposed subdivisions and the outlets for drainage. The rules are intended to assist land developers by providing uniform procedures to be followed in the processing of subdivision plats.

IT IS HEREBY ORDERED that the "Rules of the County Drain Commissioner pursuant to Section 105 (c) of Act 288 of the Public Act of Michigan of 1967, as amended" are hereby amended and shall be followed in the processing of all subdivision plats, the improvement of all drainage which is now or will come under the jurisdiction of the office of the County Drain Commissioner.

IT IS HEREBY FURTHER ORDERED that the effective dates of the following rules shall be the 4th day of September, 1990.

Clinton County Drain Commissioner  
100 E. State St., Suite 2300  
St. Johns, Michigan 48879  
Phone (989)224-5160

Revised this 14th day of March, 1997.

## **RULES FOR INTERNAL & EXTERNAL DRAINAGE FOR SUBDIVISIONS**

### **I. PURPOSE**

- A. Act 288 of the Public Acts of 1967 is known as the Subdivision Control Act of 1967. All plats to be recorded with the Register of Deeds must be in conformity with this Act. The following Rules are issued to guide land developers interested in subdividing land and to provide for a uniform method of preparing plats submitted to the office of the Drain Commissioner for processing in accordance with said Act.
- B. The Drain Commissioner of Clinton County, through legislative enactment, has acquired jurisdiction over established county drains and may under the terms of this Act acquire jurisdiction of drainage systems within subdivided lands and drains external to the proposed subdivision after January 1, 1968. In accordance with the provisions of the Act, the Drain Commissioner has the right to require that county drains, both within and without the plat, be approved to the standards established by the Drain Commissioner. The Act also makes it possible for the proprietor to record a plat before the required improvements are made, provided a satisfactory bond is deposited with the Drain Commissioner to insure performance.

### **II DEFINITIONS**

- A. Commissioner: The Drain Commissioner of the County of Clinton, State of Michigan
- B. Engineer: The Drain Engineer or Surveyor of the office of the Clinton County Drain Commissioner, or an engineer contracted by him for the purpose of reviewing development.
- C. Proprietor: Any person, firm association, partnership, corporation or combination of any of them, who submits a plat for processing under the Plat Act

### **III PRELIMINARY PLAT REQUIREMENTS** (see Page 19 entitled “Preliminary Plat Requirement Check List”)

#### **A. Submission of Tentative Layout**

- 1. In order that subdivision plats may be prepared in conformity with the Subdivision Control Act of 1967, as amended, the Proprietor shall have prepared a preliminary or tentative plan showing the layout of the area intended to be platted. This plan shall be prepared under the direction of a registered professional civil engineer or a licensed land surveyor, and shall be drawn to a scale not more than 1"

= 200'. Each copy of the preliminary plat shall be accompanied by a copy of the site report furnished the Department of Health under their rule, unless sanitary sewer capacity is available to serve the proposed development.

2. The tentative plan shall give the legal description and acreage of the proposed subdivision with reference to the U.S. Public Land Survey and the name of the township, city or village. The plan shall show the proposed street and alley layout, lot and plat dimensions, all pertinent factors such as adjoining roads and subdivisions, contours, rivers, railroads, high tension tower lines or underground transmission lines, cemeteries, parks, natural water courses, county drains, sewers, easements, or any other feature, the existence, location or description of which might be of value in determining the overall requirements for the subdivision. Storm drainage system shall be tentatively shown. The tentative storm layout shall generally incorporate minimum design standards.

3. Easements for public utilities shall be shown with the tentative layout. The Proprietor is informed that the area utility companies have prepared a utility easement guide for use by interested parties. Inasmuch as improper utility easement location can result in a change in plat layout, the Proprietor is advised to consult with the respective utility companies before presentation of the tentative layout for approval. Maximum 5' contour information should be shown on the same plan.

4. In the case where the Proprietor wishes to subdivide a given area but wishes to begin with only a portion of the total area, the original plat shall include the proposed general layout for the entire area. The part which is proposed to be subdivided first shall be clearly superimposed upon the overall plan in order to illustrate clearly the method of development which the Proprietor intends to follow. Each subsequent plat shall follow the same procedure until the entire area controlled by the Proprietor is subdivided. The final acceptance of a subdivision which is a partial development of a larger general layout does not automatically insure the final acceptance of the overall layout. The intent is to permit some flexibility as necessary to make any changes.

5. With the preliminary plat, a topographical map must be submitted showing contours at maximum five (5) foot intervals for the entire drainage area affecting the subdivision. The map will show the delineation of the drainage boundary and the acres inside the boundary. The map shall be legibly drawn to datum determined by U.S.G.S. or U.S.C. & G.S. and shall show the north arrow and scale.

6. Two prints of the preliminary plat layout prepared in accordance with the above requirements shall be submitted together with the review fee and a letter of transmittal requesting that the plat plan be reviewed and, if found satisfactory, approved. The names of the Proprietor and engineering or surveying firm, with mailing addresses and telephone numbers for each, shall be included with the transmittal.

7. If the proposed plat as submitted meets with all the requirements, one approved copy of the tentative plan will be returned. Approval of the preliminary plan is required before proceeding with the preparation of drainage plans. If the proposed plat is not approved as originally submitted, the Commissioner notifies the Proprietor in writing setting forth the reasons for withholding approval and requests that the necessary changes be made and the revised layout "resubmitted".

8. Approval of the tentative layout is not intended to indicate final approval if either the Proprietor or the Commissioner find it advantageous to make changes before the final plat is presented to the Commissioner for signature. Such changes can be made, provided that the same procedures outlined above are repeated with each change in the layout. The Proprietor is reminded that approval of the proposed subdivision by the local governing body is also required under the Subdivision Control Act. Such changes shall be incorporated in the layout and a new preliminary plan resubmitted even though the original layout may have already been approved by the Commissioner. If the Proprietor does not present his final plat to the Commissioner for approval within a period of two years after receiving approval of the tentative layout, it shall be necessary that he resubmit the layout for review in the light of new information which may have become available during the interim.

## **B. Right-of-Way Requirements**

1. The following minimum right-of-way widths are required for established county drains and natural watercourses that will be utilized and lay within the confines of the proposed subdivision.

a. Open drains and watercourses whose maximum bank to bank width exceeds 30 feet shall have a right-of-way equal to the extreme width of drain, plus 50 feet. The easement shall be centered on the centerline of drain or watercourse.

b. Open drains and watercourses whose maximum bank to bank width is less than 30 feet shall have a right-of-way equal to the extreme width of drain, plus 40 feet. The easement shall be centered on centerline of drain or watercourse.

c. Enclosed drains whose internal diameter is 3'-0" or less shall have a right-of-way of 30 feet centered on the center line of the enclosure.

d. Enclosed drains whose internal diameter exceeds 3'-0" shall have a right-of-way of 40 feet + the pipe diameter centered on the centerline of the enclosure. Width of right-of-way shall consider the depth of the conduit system.

2. The above widths shall govern generally. However, if the Engineer determines that additional right-of-way is required for proper construction, or because of special circumstances, or depth, such facts shall be made known to the Proprietor after a

review of the preliminary layout by the Engineer. Exceptions to the above right-of-way requirements may be made at the discretion of the Commissioner.

**C. Drainage Districts**

In accordance with Act 40 of the Public Acts of 1956, as amended, the drainage of the proposed subdivision will be contained within the Drainage District or Drainage districts of an established County Drain, or if there be no established drainage district then one will be established, including the drainage improvements. There are provisions for minor alterations of the legal limits of established drainage districts.

**D. Road and Street Drainage**

The Subdivision Control Act of 1967, as amended, recognizes the responsibility of the Board of County Road Commissioners to establish rules for Plat Submission and for proper drainage for highways, streets and alleys in its jurisdiction. It is contemplated that the drainage of the land embraced by the subdivision will be conveyed to the outlet by means of highway, street or alley drainage structures. Drainage originating outside the subdivision limits, which has hitherto flowed onto or across the subdivision, and natural watercourses and county drains that traverse or abut the subdivision, will be reviewed by the Commissioner for adequacy.

**IV FINAL PLAT REQUIREMENTS**

**A. How Final Plat is Approved**

The Subdivision Control Act required that a true plat be delivered to the Commissioner for review. Such final plats must be prepared in accordance with the requirement of the Subdivision Control Act which sets forth the size, scale, material, and reproduction process. If the Commissioner approves the plat, he will affix his signature and the date on its certificate of approval and deliver the plat within ten days after date of approval. If the Commissioner rejects the plat, written notice of such rejection and reasons therefore are given to the Proprietor within ten days.

**B. What is Required Before Approval**

Prior to approval of the final plat, the Commissioner may require that the county drains and watercourses shown on the plat shall be improved in accordance with the construction standards of the Commissioner, including any bridges or culverts where necessary. Such improvements shall be made prior to the submission of the final plat for the Commissioner's approval. However, the Commissioner may approve the plat prior to the making of the necessary improvements, provided the Proprietor files a satisfactory bond with the Commissioner to guarantee the improvements after the approval of the plat. The amount of the bond will be determined by the Commissioner after a review of the subdivision layout. Such bond shall be posted prior to submission of the final plat for Commissioner's approval. The Proprietor is reminded that under the Subdivision Control Act he is

required to place monuments at certain points in the subdivision. The top of these monuments shall be approximately level with the finished grade at the time the final improvements are completed.

If the drainage facilities are to be dedicated to the drainage district, all documents necessary for the Drain Commissioner to complete the “Dedication Deed and Agreement” (a/k/a 433 Agreement) and right of way documents shall be provided to the Drain Commissioner prior to final approval. Said documents shall include, but are not limited to:

Exhibit ‘A’ - Certification of the adequacy of the outlet prepared by a Professional Engineer.

Exhibit ‘B’ - Description of the centerline location of all proposed drains referenced to adjacent US Survey corners.

Exhibit ‘C’ - Written description or map indicating the perimeter (including offsite tributary areas) of the proposed drainage district.

A digital copy of the final plat is requested after recording with the Register of Deeds.

**C. Procedures When Drainage Improvements are Made Before Submission of Final Plats**

1. If the Proprietor desires to make the necessary drain improvements required in the proposed subdivision before submission of the final plat, his engineer shall prepare drainage plans in accordance with these rules showing in detail the work which will be performed.

2. It will be necessary that the Proprietor make satisfactory arrangements with the Commissioner before commencing to do any work in the subdivision to provide for the inspection of the project by the Commissioner's Inspector. These arrangements shall include, among other things, the submission of three sets of approved drainage plans and sepias, satisfactory evidence of insurance coverage, and a copy of the signed contract between the Proprietor and his Contractor covering the work to be performed. The proposed improvements shall be established as county drains pursuant to Section 433 of Act 40 of 1956 as amended. If the drainage work contemplates a relocation, tiling, deepening or widening of a County Drain, application for permission will be filed with the office of the Drain Commissioner. This application will be accompanied by the necessary release of right-of-way, in recordable form, accomplished by all owners of interest. If it is necessary to retain a natural on site watercourse because this watercourse serves land outside the subdivision, then recordable releases for said watercourse will be submitted. The contract shall show in addition to the name of the Contractor, the items of work involved, the total cost of project, and the proposed completion date. At the time this information is supplied to the Commissioner, inspection deposits shall be computed and payment of same shall be made to the Commissioner prior to commencing work. The Proprietor will be held responsible for the actual inspection

costs incurred by the Commissioner. Before work commences, an inspector must be assigned to the project by the Drain Commissioner.

3. The Proprietor should take whatever precautions he deems necessary in his direct relations with this contractor in order to assure that the work performed by the contractor meets the approval of the Engineer. The Proprietor shall be held totally responsible for the fulfillment of his obligations to the Commissioner notwithstanding that his contractor or consulting engineer may be at fault.

4. Upon completion of the improvement to the satisfaction of the Commissioner, the Proprietor may submit his final plat to the Commissioner for approval. At this time he may be required to post a nominal bond with the Commissioner to guarantee repairs of any defects which may show up as a result of poor workmanship or defective materials within one year after completion of the improvement. The Proprietor shall execute all required documents and comply with inspection and review procedures prior to submitting the plat document. Should no defects occur within this period of one year and should no adjustments be required, this bond will be returned to the Proprietor in its entirety.

**D. Procedures When Drainage Improvements are Made After Approval of Final Plat**

1. If it is the desire of the Proprietor to have the plat recorded before completing improvements, he shall enter into an agreement with the Commissioner and post a bond in an amount determined by the Commissioner to guarantee the completion of all improvements in accordance with the Commissioner's requirements.

2. The time of completion of the drainage improvements under this arrangement shall generally not extend for a period greater than one year from the original date of the agreement. If after this period the improvements are not completed, the Commissioner may exercise his right under the terms of the agreement to forfeit the bond and proceed to fulfill the Proprietor's obligation under such agreement at such time and in such manner as the Commissioner may determine.

3. In the event the Proprietor makes a cash deposit to guarantee the requirements with the plat, the Commissioner shall rebate to him portions of the original deposit as the work progresses. However, the amount of deposit retained by the Commissioner will at no time be reduced to less than the estimated cost of the work still remaining to be completed.

**V CONSTRUCTION PLANS**

**A. Drainage Plans**

After the preliminary plan of the proposed subdivision has been approved by the Commissioner as outlined heretofore, the Proprietor's Engineer may proceed with the preparation of the drainage plans for the improvement of the subdivision. These plans shall show plan, profile, cross-sections, location of drainage facilities and structures, hydrologic calculations, special details, size, material, grades and such other information as may be necessary to complete the work. All plans shall be referenced to the U.S.G.S. or U.S.C & G.S. Bench Mark Systems. Three sets of prints and drainage plans shall be submitted to the Commissioner for review. After the plans have been reviewed by the Commissioner, one set of prints will be returned to the Proprietor's engineer marked with either an approval or annotated with corrections or changes which may be required. When the improvement plans have been finally approved by the Commissioner and all required agreements executed, the Proprietor may proceed to make the final arrangements for placing the work under construction, as outlined in Section IV above. It should be noted at this point that if the information given to the Commissioner does not represent the conditions as they exist on the ground, and should any revisions be required as a result of this lack of complete information, such revisions shall be made by the Proprietor notwithstanding that the plans had been approved. The Proprietor's Engineer shall submit one set of reproducible "as constructed" plans to the Commissioner when all drainage improvements have been completed. A digital copy of the "as constructed" plans is requested, where possible. He shall also submit the acreage or square footage contained in each lot. This must be done before a final release will be given by the Commissioner.

**B. Utility Plans**

If any utilities are to be located within the drainage right-of-way of the proposed subdivision, the Proprietor's engineer shall present plans of such utilities to the Commissioner for his approval as to location. If possible, such plans should be presented at the same time as drainage plans so that all details of construction and location may be checked and properly oriented with each other. In order to avoid conflict, it is important that a careful investigation be made where underground utilities are in close proximity to proposed storm sewers, or where they cross each other.

**VI IMPROVEMENTS REQUIRED**

All work performed in the right-of-way of County Drains shall be in accordance with the Commissioner's rules.

**A. Clearing Within Drain Right-of-Way**

All trees and brush, including the roots thereof, shall be removed from the proposed right-of-way of the drains within the limits of the subdivision, unless otherwise permitted by the Commissioner.

**B. Drainage**

1. When street drainage outlets into County Drains, such outlets shall be designed so as to enter the drain or watercourse at an angle of 90° or less, as determined by the upstream centerline, and in accordance with current Standards and Specifications of the Drain Commissioner. Headwalls, end sections, riprap or sodding will be required. Minimum street centerline grade allowable is +/- 0.50%. Minimum open drain or watercourse centerline grade allowable is +/- 0.05%.
2. The plans which are prepared by the Proprietor's Engineer shall clearly show how the surface drainage will be disposed of from the street in the proposed subdivision. Where drainage easements are required, the existing ground elevations shall be shown together with final ditch or storm sewer profiles proposed to be constructed. In order to adequately provide for the surface drainage of the proposed subdivision it is often necessary to do work outside the limits of the subdivision or to acquire easements across private property. It will be necessary that the plans submitted by the Proprietor's Engineer reveal how this will be accomplished. In the event the proposed subdivision is a partial development of a larger area, it will be necessary for each subdivision to be self-sufficient from the standpoint of surface drainage and not be dependent upon work easements to be performed in the next subdivision. If drainage easements are required beyond the limits of the subdivision, these easements shall be acquired by the Proprietor in the name of the Drainage District.
3. Where storm sewers are to be constructed, the Proprietor's construction plans and profiles shall show the location and size of each sewer line and drainage structure in the drainage system, together with elevations and proposed grades. A working drawing submitted with the plan sheets shall clearly show the areas which will be contributing storm water runoff to each inlet in the sewer system. Minimum allowable storm sewer size is 12 inches in diameter. All sewer and culvert pipe shall be designated on the plans by the appropriate class as specified by A.S.T.M.C-76, A.A.S.H.O.M-36 or M-65. Where a storm sewer will be continually subjected to a hydraulic head, an internal rubber gasket of a type approved by the Commissioner will be required.
4. When necessary for drainage purposes, crossroad culverts and driveway approach culverts shall be installed at locations shown on the plans or as designated by the Engineer. The pipe used in culverts may be reinforced concrete culvert pipe or corrugated steel pipe and pipe arch. The pipe furnished shall conform to the Current Specifications for Reinforced Concrete, Storm Drain and Sewer Pipe, A.S.T.M. Designation: C-76, or to the Current Specifications for Corrugated Steel Culvert Pipe A.A.S.H.O. Designation: M-36.
5. All drains shall be designed to carry a minimum discharge of (1) cubic foot per second per acre or hydrologic calculation utilizing an approved equation shall be submitted. For closed drains, the pipe size shall not be decreased in the downstream direction even though increased slope may provide adequate capacity in the smaller pipe. Manholes or catch basins shall be constructed at all street intersections, entrance of branch drains, angles in drains, change in size of pipe, change of grade,

and located not more than 400 feet apart. Maximum distance of overland or gutterline flow is 300'. Manholes and catch basins shall be pre-cast or circular cement block construction and plastered inside and out with a minimum inside diameter of (48) inches at the bottom and (24) inches at the top. A minimum sump of (3) feet shall be provided in all catch basins. MDOT Standard Castings shall be placed on all manholes and catch basins. All structures shall conform to Drain Commissioner standards and specifications. See attached "Preliminary Storm Sewer Design" form for design criteria.

**C. Final Cleanup, Seeding, Sodding and Mulching**

1. The Proprietor shall be responsible for cleaning all sewers, manholes, catch basins, or other structures affected by the operations in the subdivision before final release.
  
2. Sodding, seeding and mulching where required shall be done in accordance with the requirements of the Commissioner's General Specifications. (See Specifications) The work shall be performed only after prior acceptability of the finished grade. This work must be performed under the inspection of the Commissioner or his agent.

**D. Contingencies**

It is not the intent of the above requirements and specifications to cover every foreseeable item of work which may be necessary in order to complete the improvements to the satisfaction of the Commissioner. If it should become necessary, in the opinion of the Commissioner, that certain work not heretofore itemized be performed as part of the drainage improvement, it shall be the Proprietor's obligation to do so upon the direction of the Commissioner. Any disagreements between the Proprietor and the Commissioner's Engineer as to the obligations of the Proprietor shall be presented to the Commissioner and his decision in the matter shall be final.

**VII INSURANCE REQUIREMENTS**

The Proprietor shall cause its contractor(s) to furnish to the Drain Commissioner satisfactory evidence of public liability and property damage insurance coverage as set forth by the State of Michigan and in accordance with Drain Commissioner standards for limits of liability coverage.

**VIII STAKING REQUIREMENTS**

The following are the minimum requirements for construction staking (may be modified for use of required in-line laser equipment):

**A. Storm Sewers**

1. Show offset to utility on stakes of "cut sheet".
2. Alignment stakes must be furnished every 100' on straight lines, every 50' on radii over 200' and every 25' on radii under 200'. (Grade stakes as required by the Commissioner).
3. Set a top of casting grade for all structures. (In addition, reference top of casting grade to the flow line).
4. Furnish grade stakes every 100' on which flow line grade is clearly written. A "cut sheet" shall also be used to indicate the flow lines.
5. Each structure should be witnessed by two stakes, and direction and size of all pipe entering the structure should also be clearly indicated by use of stakes.
6. At each deflection in alignment or change in flow line grade, there must be a minimum of two backsight stakes.

**B. Open Drains**

1. Show offset to utility on stakes or "cut sheet".
2. Alignment stakes must be furnished every 100' on straight lines, every 50' radii over 200' and every 25' on radii under 200'. (Grade stakes as required by the Commissioner.)
3. Each structure should be witnessed by two stakes, with a hub marking the actual location.

**C. General**

1. Where required, the Proprietor's contractor must furnish the Commissioner's inspector with two copies of all "cut sheets" prior to starting work.
2. All the above requirements are the necessary minimum and their fulfillment will be a pre-requisite to any work which requires alignment or grade. These requirements will satisfy normal operations but may have to be modified or expanded for unusual construction operations.
3. Drain Commissioner's personnel shall inspect all installations at the expense of the owner.

**D. A preconstruction meeting is required prior to initiating construction.**

## **SUBDIVISION CHECKLIST**

- I. PRELIMINARY PLAT (see attached 'Preliminary Plat Requirements Check List' and Section III, page 4)
  - A. Drainage outlet (legal outlet) shown
  - B. Schematic subsurface drainage system defined
  - C. Tentative easements shown for existing and proposed drains
  - D. Drainage district for subdistrict watersheds clearly defined
  
- II. DESIGN (see attached 'Preliminary Storm Sewer Design' form and Section V, page 10)
  - A. System designed with hydrologic calculations based on minimum of 119/T+15 or modified City of Lansing intensity equation
  - B. Storm water detention form completed with detention facility designed (see attached form)
  - C. System design in conformance with Clinton County Drain Commissioner Standards and Specifications
  - D. Clinton County Standard detail sheets included in plans submitted
  - E. Complete plan-profile construction plans provided
  - F. Map of drainage subdistrict with property description, and Exhibits "A", "B", and "C" pursuant to Section 433 of Act 40 of 1956, as amended (see Section IV, Paragraph B., page 8)
  - G. Acreage identified for each lot or parcel.

Detention pond volumes are designed by determining the volume difference between 10 year storm, PRESENT land use and 100 year storm, PROPOSED land use. Computation form below must be completed and attached to any project plans submitted for Drain Office approval.

SITE LOCATION \_\_\_\_\_ RUNOFF "C" VALUE \_\_\_\_\_  
 DRAINAGE AREA (ACRES) \_\_\_\_\_ MAXIMUM ALLOWABLE OUTFLOW (CFS) \_\_\_\_\_\*  
 STORM RECURRENCE INTERVAL (YRS) 100

Duration	A Rainfall	B 100% Runoff	C Runoff "C"	D Runoff (Ac.-Ft.)	E Outflow (Ac.-Ft.)	F Storage (Ac.-Ft.)
(10 Min)	0.17x7.0=1.19					
(20 Min)	0.33x5.0=1.65					
(30 Min)	0.50x3.8=1.90					
(40 Min)	0.67x3.2=2.13					
1 Hour	1.00x2.3=2.3					
2 Hour	2.00x1.4=2.8					
3 Hour	3.00x1.0=3.0					
4 Hour	4.00x0.8=3.2					
5 Hour	5.00x0.65=3.25					
6 Hour	6.00x0.55=3.30					
7 Hour	7.00x0.48=3.36					
8 Hour	8.00x0.43=3.44					
9 Hour	9.00x0.39=3.51					
10 Hour	10.00x0.36=3.60					
12 Hour	12.00x0.31=3.72					
18 Hour	18.00x0.22=3.96					
24 Hour	24.00x0.18=4.32					

A) Inches of Rainfall: Select the appropriate value from the East Lansing, Michigan RAINFALL INTENSITY-DURATION-FREQUENCY CURVES, 1910-1951, and multiply by the given duration in hours.

B) 100% Runoff for \_\_\_\_\_ Acres: Divide inches of rainfall by 12 and multiply by number of acres.

C) Proposed % Runoff: Insert selected "C" value.. "C" value of the total site can be adjusted as a ratio of impervious area, plus 0.05 for vacant area.

D) Runoff: Multiply 100% runoff value by "C" value.

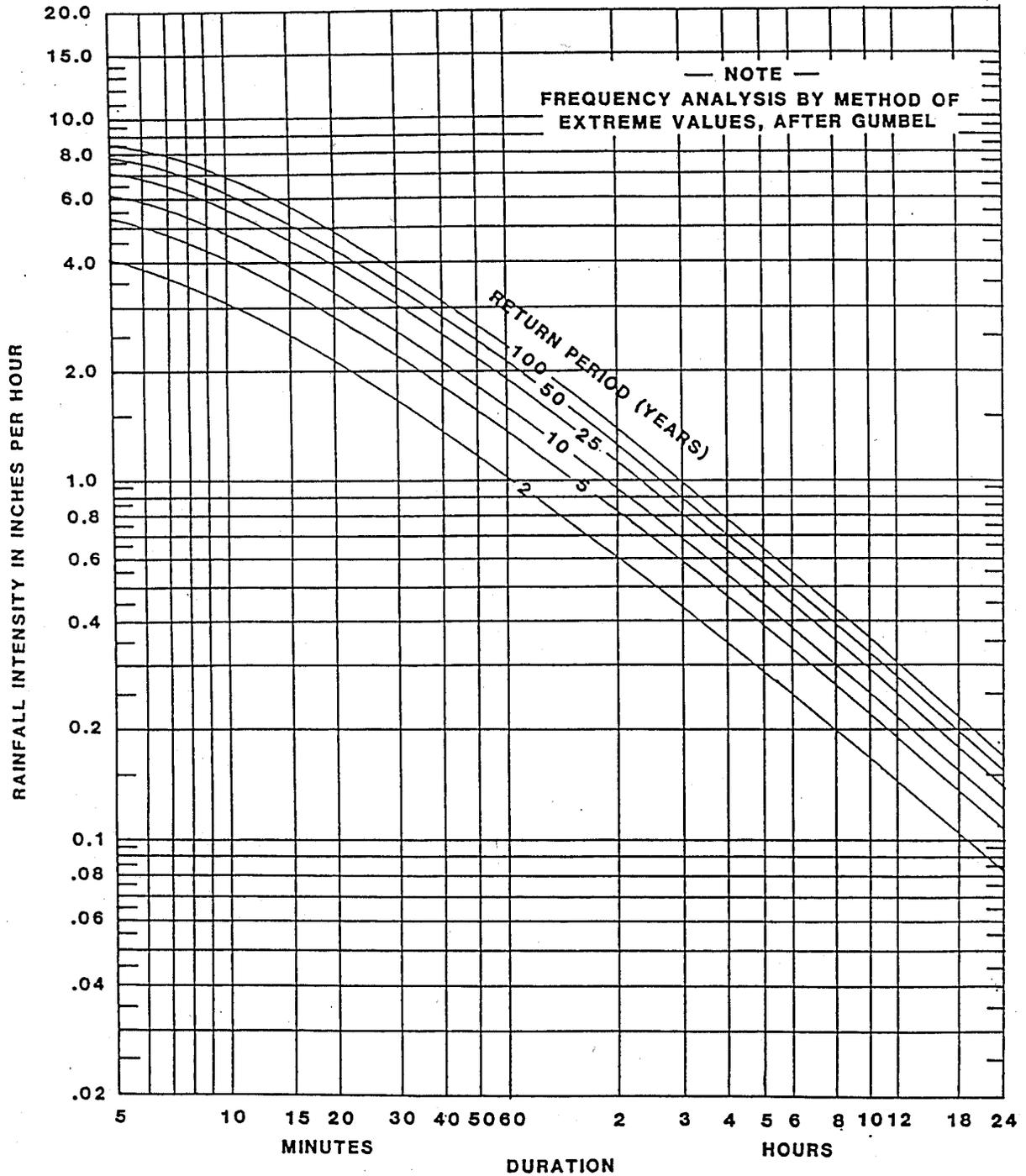
E) Outflow: Multiply outflow in cfs by duration in hours, then by 3600 and divide by 43,560.

F) Storage Required: Subtract Outflow from Runoff. Storage value will increase to a peak value and then decrease. The Peak (largest) value for storage should be used.

\* Maximum allowable Outflow (FCS) 10 year storm - 30 min. duration - C=0.15  
 $Q = CIA = (0.15) (2.6) (\text{Acres}) = \text{CFS}$

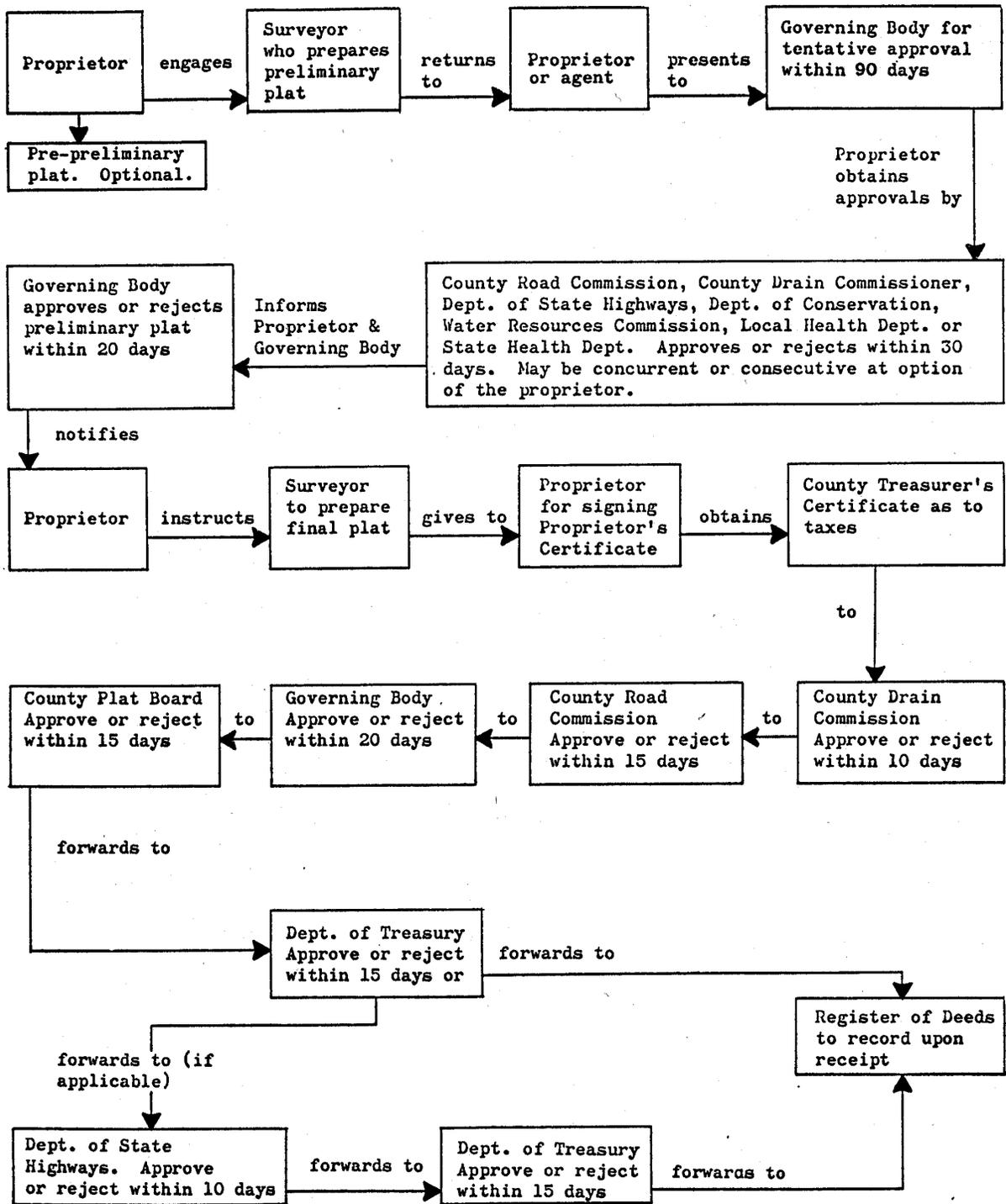
CLINTON COUNTY DRAIN OFFICE 1017 S. US-27, Ste B-35 St. Johns, MI 48879	RUNOFF DETENTION	BY:	DATE:
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EAST LANSING, MICHIGAN  
1910-1951



10- YR. STORM INTENSITY,  $I = 119 / (T + 15) \pm$

APPLICATION OF ACT 288 OF 1967 (EFF. 1/1/68)



CLINTON COUNTY DRAIN COMMISSIONER'S PRELIMINARY PLAT REQUIREMENT CHECK LIST  
 (A composite prepared from "SUBDIVISION CONTROL PROCEDURES" published by the Clinton County Drain  
 Commissioner pursuant to Act 288 of 1967, as amended)

PRELIMINARY OR TENTATIVE PLAT:	COMMENT:
1. North arrow	
2. Scale of not more than 1" = 200'	
3. Name, address, phone of Engineer and/or Surveyor	
4. Name, address, phone of Engineer and/or Surveyor	
5. Maximum 5 foot contour interval covering the entire drainage area	
6. Legal description per US Public Land Survey and acreage of described parcel	
7. Proposed street, alley & lot layout with scaled dimensions	
8. Proposed plat boundary bearings and dimensions	
9. Basis of bearings noted	
10. Basis of vertical datum (USGS, USC&GS, NVD, etc.)	
11. On site benchmarks shown with elevation stated	
12. All pertinent information shown, including but not limited to: adjoining and on site roads, highways, subdivisions, railroads, overhead and buried utility lines and mains, drains, natural water-courses, rivers, lakes, streams, cemeteries, parks, existing and proposed easements and right of ways*, all visible improvements on the parcel, present use and owner's name on adjoining parcels, location and description of other features.	
13. When partial development of larger site is proposed, general layout of entire site with proposed plat clearly superimposed thereon.	
14. Schematic layout of proposed storm sewer, sanitary sewer and water mains as applicable, with drainage outlet shown.	
15. Three (3) copies of plan with letter of submittal attached.	
16. Copy of Department of Health site report attached if sanitary sewer is not available.	
17. IF NOT APPROVED, attach Check List with appropriate changes noted for revision and resubmittal of plat.	
18. IF APPROVED, one copy of approved plan returned.	
GENERAL NOTES:	
	1. Two (2) year lime limit on all approvals. * 2. For right of way width requirements, see III, B, 1 of Procedures. 3. Approval of Preliminary or Tentative Plat required prior to preparation of construction plans.

