

# SUBDIVISION DEVELOPMENT REGULATIONS

of the  
City of Madison, Mississippi



Effective February 5, 2008

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## **INTRODUCTION:**

The City of Madison Subdivision Development Regulations outline and describe the minimum and recommended design criteria for developments constructed in the City of Madison. The purpose of these written standards is to serve as a guide to architects, engineers, developers, and builders that will assist them with their design and construction. This applies to both residential and commercial developments. All engineers and developers should be aware of all ordinances that apply to their project.

It is recognized that every situation has not been addressed and that there may be situations where certain criteria do not apply. These instances will be handled on a case by case basis by the Public Works Director and City Engineer. The limitations of these design criteria are not meant to limit the scope of engineering design. However, any new developments or methods must be demonstrated to be satisfactory before approval can be given. These cases will be considered on an individual basis.

If there is an error or omission of information provided within this document it shall be brought to the attention of the Public Works Director for clarification. In the event a design criteria has been left out of this document, the City of Madison will reference the Minimum Design Criteria for Mississippi Public Water Systems (Mississippi State Department of Health), the American Water Works Association, the Mississippi Department of Environmental Quality, or other recognized minimum standards.

**ORDINANCE AMENDING CHAPTER XI**  
**"SUBDIVISION REGULATIONS, CITY OF MADISON, MISSISSIPPI"**  
**OF THE CODE OF ORDINANCES**  
**OF THE**  
**CITY OF MADISON, MISSISSIPPI**  
**CHAPTER XI SUBDIVISION REGULATIONS**

BE IT ORDAINED by the Mayor and Board of Aldermen of the City of Madison, Mississippi that Chapter XI of the Code of Ordinances of the City of Madison is hereby amended to read as follows:

**SECTION 11-1 ~ GENERAL PROVISIONS**

**I.     TITLE**

These regulations shall be known as the "SUBDIVISION DEVELOPMENT REGULATIONS, CITY OF MADISON, MISSISSIPPI" and shall govern all development within its jurisdiction and may be so cited.

**II.    SCOPE**

It shall be unlawful for any person or entity to lay out, subdivide, re-subdivide, plat or replat any land into blocks, lots or streets within the City of Madison or to sell property herein which has not been subdivided, re-subdivided, platted or replatted according to this ordinance.

The City of Madison will withhold acceptance of improvements of any nature whatsoever, including the maintenance of streets and the furnishing of water or sewer facilities, until a plat of the subdivision has been approved by the Mayor and Board of Aldermen and recorded in the Chancery Clerk's Office.

All land subdivision shall require a plat to be filed with the City Clerk and approved by the Mayor and Board of Aldermen, and no permits shall be issued for the construction of buildings, unless all applicable terms and conditions of these subdivision regulations have been met.

**AN ORDINANCE ESTABLISHING REGULATIONS GOVERNING SUBDIVISION OF LAND WITHIN THE JURISDICTIONAL LIMITS OF THE CITY OF MADISON, MISSISSIPPI, AND PROVIDING FOR THE ADMINISTRATION, ENFORCEMENT, AND AMENDMENT THEREOF, AND FOR THE REPEAL OF ALL ORDINANCES IN CONFLICT THEREWITH**

**PREAMBLE**

WHEREAS, Statutes of the State of Mississippi Sections 17-1-3 (Local Government - General Powers) 17-1-23, (Subdivision Regulation), 17-1-25 (Acceptance for Maintenance of Subdivision Streets before the Subdivision May Be Furnished and Approved) of the *Mississippi Code of 1972*, as amended and recompiled, empower the Mayor and Board of Aldermen of the City of Madison, Mississippi, to enact subdivision regulations and provide for their administration, enforcement and amendment; and

WHEREAS, the Mayor and Board of Aldermen of the City of Madison deem it necessary for the purpose of promoting the health, safety, morals, and general welfare of the City to enact a subdivision ordinance; and

WHEREAS, the Mayor and Board of Aldermen have caused to be prepared such a subdivision ordinance designed to set forth certain procedures and standards to be followed in the development or redevelopment of land subdivisions in the City of Madison to assure that development of the City is orderly, healthful, efficient and economic; and

WHEREAS, the Mayor and Board of Aldermen have given due public notice of hearings relating to these subdivision regulations, and have held such public hearings in accordance with the requirements of Section 17-1-15, (Procedure for Establishing Regulations Notice and Hearing) of the Mississippi Code of 1972, annotated, as amended:

NOW, THEREFORE, BE IT ORDAINED BY THE MAYOR AND BOARD OF ALDERMEN, from and after the date of adoption of these Regulations, that these Regulations shall govern all subdivision of land within the jurisdictional limits of the City of Madison, Mississippi.

## **SECTION 11-2 ~ PLAT AND CONSTRUCTION PLAN APPROVAL**

### **I. PROCEDURE FOR APPROVAL OF PRELIMINARY PLAT**

Procedure for Approval of Preliminary Plat (Inside or Outside City Limits when connecting to City Utilities) - Twelve (12) copies of the Preliminary Plat shall be submitted to the Department of Planning and Development with a letter requesting approval and also enclosing payment of all required fees. This shall be submitted to the Department of Planning and Development by the submittal deadlines established by the Board of Aldermen. If construction plans are not approved within six (6) months of the Preliminary Plat approval date, the Preliminary Plat approval is revoked. The Preliminary Plat shall contain the following information:

- A. Title block in right bottom corner showing name of subdivision;
- B. North arrow, scale and date;
- C. The names and addresses of the property owner and the engineer and/or surveyor;
- D. The boundary lines and total acreage of the tract to be subdivided;
- E. The location, widths, direction/traffic flow and names of all major existing, proposed and/or platted streets and other public ways within and/or adjacent to the tract, railroad right-of-way and other important features, such as section lines, political subdivisions and corporation lines;
- F. Existing and proposed sewers, water mains, culverts or other underground structures, and easements within the tract and immediately adjacent thereto with pipe sizes and location indicated;
- G. The Preliminary Plat shall be clearly and legibly drawn at a minimum scale of one inch (1") equals two hundred feet (200'). Minimum sheet size shall be eighteen by twenty-four inches (18" x 24"). If the complete plat cannot be shown on one (1) sheet of this size, it may be shown on more than one (1) sheet with an index map on a separate sheet of the same size. Plats shall be numbered "Sheet 1 of \_\_, Sheet 2 of \_\_," etc.;
- H. The layout, number and exact dimensions of proposed lots and existing adjacent land/lot owners;
- I. The location of all monuments;
- J. Building setback lines on all lots;



- K. Private deed restrictions, if any;
- L. Indicate all flood plains and floodways within and adjoining the proposed development by lot if plat contains different zones. Plat shall reflect site topography with two foot (2') contour intervals National Geodetic Vertical Datum (NGVD). Plat shall reflect the 100-year flood plain limits and the location of the floodway and other requirements for subdivision development in the flood prevention ordinance; establish Finished Floor Elevation (FFE) in floodways;
- M. Provide street cross sections in accordance with Section 11-4 of the "Subdivision Regulations, City of Madison, Mississippi" and proposed street names;
- N. Location and construction of sidewalks to be in accordance with Amendment to City Ordinance;
- O. Proposed density expressed as lots (units) per acre;
- P. If open space is required, then a statement as to the size required should be provided, show calculations;
- Q. A vicinity map depicting existing streets, highways, township, range and section designations;
- R. Show current zoning;
- S. Submit a final copy of Restrictive Covenants along with the Preliminary Plat (and for recording with the final plat). Approval of the Preliminary Plat by the Department of Public Works and Department of Planning and Development shall not constitute or guarantee approval of the final plat, rather it shall be deemed as authorization to proceed with final construction plans;
- T. A listing of Construction "Best Management Practices" (BMPs) that are proposed to be utilized during the construction of the subdivision;
- U. Preliminary plat shall include conceptual compliance requirements of stormwater detention ordinance, erosion control ordinance, landscape ordinance, Storm Water Pollution Prevention Plan (SWPPP) and the zoning ordinance;
- V. Where required, a road widening easement and width shall be shown;

- W. Location of construction entrances for all phases (where required) and placement of construction traffic signs shown;
- X. Minimum square footage of Residences/Buildings (heated and cooled).
- Y. Show proposed drainage of all lots with direction arrows.

## II. PROCEDURE FOR APPROVAL OF CONSTRUCTION PLANS

After approval by the Mayor and Board of Aldermen of the preliminary plat, three (3) sets of construction plans and specifications shall be submitted to the Public Works Director for preliminary review. All construction plans must be approved before any work starts.

Upon receiving preliminary review comments from the Public Works Director and City Engineer, the Developer or his Engineer shall resubmit the corrected set of plans and specifications to the Public Works Director and the City Engineer along with approval letters from all regulatory agencies. All engineering plans and specifications for extensions or modifications to water or sewer systems must be approved by the Mississippi State Department of Health (MSDH) or the Mississippi Department of Environmental Quality (DEQ) prior to beginning construction.

When final review has been completed, all corrections made and all approval letters received, the City Engineer will advise the Developer or his Engineer in writing of his plan's acceptance.

Prior to any improvements being made, the Developer must complete a "SUBDIVISION DEVELOPMENT PERMIT" (see exhibit # 2) issued by the Public Works Director.

Construction pursuant to the approved construction plans must commence within sixty (60) days of construction plan approval. The developer must maintain steady progress. If the City of Madison determines that the developer is not making steady and acceptable progress the governing authority may, after fifteen (15) days written notice to the developer, revoke all prior approvals for any portion thereof.

## III. PROCEDURE FOR APPROVAL OF FINAL PLAT

After all improvements have been made in accordance with the approved construction drawing and all required fees have been paid, along with a final inspection held by the Public Works Director and the City Engineer, the Developer must submit to the Mayor and Board of Aldermen a letter requesting review and approval of a final plat along with four (4) copies of the final plat and other required documents. The final plat shall be clearly and legibly drawn at a minimum scale of one inch (1") equals two hundred feet (200'). It shall be drawn in

permanent ink on a reproducible mylar or other material of equal durability and permanent quality. Sheet size shall be eighteen by twenty-four inches (18" x 24"), and where more than one (1) sheet is required, an index map shall be required on the same size sheet.

The final plat shall conform substantially to the preliminary plat as approved. Upon review of the final plat by the Public Works Director and City Engineer, it shall be forwarded to the Mayor and Board of Aldermen recommending approval or disapproval. The final plat shall not be approved by the Mayor and Board of Aldermen until the subdivider has done the following:

- A. Actually completed construction of all improvements as required in Section 11-3, as approved on the construction plans, or;
- B. Given the City a performance bond, certified check or letter of credit equal to 200 percent of the total estimated cost of installation of the required improvements, which shall be acceptable by the City. The bond, check or letter of credit shall be for the asphalt wearing surface and/or other items approved by the Public Works Director subject to the condition that the improvements will be completed within one year after approval of the final plat. Performance bond, certified check or letter of credit shall be required on all streets, public or private.

Following review by the Mayor and Board of Aldermen a notation of the action taken by the City shall be made on the original and three (3) copies of the final plat, including a statement of the reasons thereof if the final plat is disapproved. Upon approval of the final plat, the subdivider shall have the plat and protective covenants duly recorded in the Office of the Chancery Clerk of Madison County as required by law. No owner or agent of the owner of any land located in a subdivision as defined by these Regulations shall transfer or sell such land before a plat of such subdivision has been duly approved and recorded in the Office of the Chancery Clerk of Madison County, Mississippi.

Following the recording of the final plat, two (2) copies of the final plat with all certificates required shall be provided by the subdivider for the records of the Public Works Director. The plat cabinet number, slot number and page numbers where the plat and protective covenants are recorded shall be shown on the copies of the final plat and protective covenants furnished to the Public Works Director.

### **SECTION 11-3: REQUIRED IMPROVEMENTS AND INSPECTIONS**

The owner of the subdivision shall cause to be constructed and installed the improvements specified in this SECTION. Such construction and installation shall be in accordance with the requirements and specifications set forth by this Subdivision Ordinance.

#### **I. POLICY**

It is hereby declared to be the general policy of the Mayor and Board of Aldermen of the City of Madison to require the proprietor or proprietors or their successors in interest of any subdivision in or addition to the City of Madison, to pay all costs of improvements made to and within such subdivision and to pay all costs of the development and related incidental expenses including, but not limited to, the following:

- A. Cost of survey and plat, prepared by a professional land surveyor registered in the State of Mississippi;
- B. Cost of testing laboratory subgrade soil profile for structural design of streets, pavement and in-place material testing;
- C. Cost of establishing grades prescribed by the City for streets, alleys and sidewalks;
- D. Cost of construction of sanitary sewer facilities within and into the subdivision;
- E. Cost of construction of water facilities within and into the subdivision;
- F. Cost of construction of curb and gutter;
- G. Cost of street paving for the subdivision, street warning signs and name signs;
- H. Cost of preparation of all maps on and all reviews and approvals by applicable regulatory agencies for all above improvements. These maps and plans shall be prepared by a professional Engineer registered in the State of Mississippi;
- I. All costs for plan review and inspections;
- J. Cost of underground power and street light service;
- K. Cost of underground telephone service, cable television, gas or other City franchise services.

## II. MONUMENTS

Concrete monuments shall be placed at all corners in alignment along the boundary of the subdivision. Concrete monuments shall consist of 4-inch by 4-inch, or 4-inch diameter, concrete post not less than thirty inches (30") in length, reinforced with a single ½ inch steel rod extending not less than ¼ inch or more than ½ inch above the top of the concrete. Concrete monuments shall be firmly set in the ground to a depth of twenty-four inches (24"), except at street intersections where they shall be set flush with the ground. Markers shall be placed at all lot corners or changes in alignment in lot boundaries. These markers shall consist of iron pins not less than ½ inch in diameter and not less than twenty-four inches (24") in length.

Markers shall be set with the top thereof flushed with the finished grade. Where farming operations or other land uses might destroy or disturb the markers, they shall be sunk underground and referenced to permanent landmarks.

## III. IMPROVEMENTS

- A. In consideration of the City of Madison's acceptance of any subdivision and assuming the responsibility of maintaining the dedicated streets laid out therein, the developer shall cause to be constructed at no expense to the City of Madison the following minimum improvements in accordance with the approved plans and the specifications and these governing Development Regulations and Amendments and Revisions thereof:
  - 1. Grading of streets and sidewalks shall be for the full width of the right-of-way. All backslopes within or adjacent to the development shall be a minimum of 3:1. Valid exceptions to the grading requirement outside of the improvement area may be granted if necessitated by excessive grade change and/or the excessive removal of large trees which would be caused by the grading of the full right-of-way width providing such is approved by the Public Works Director or City Engineer;
  - 2. Surface drainage of streets shall have approved concrete curb and gutter, except where not required on major arterial streets, with curb inlets, manholes and underground storm sewers with all exposed drains protected from mud and foreign material;
  - 3. Installation of pipe culverts, box culverts, bridges or other drainage structures as required on the approved plans;
  - 4. Excavation of drainage ditches;

5. Topping of subgrades with selected subbase materials as required on the approved plans;
  6. Construction of pavement base and surface courses;
  7. Grading, dressing and erosion control measures on shoulders and slopes shall be provided until completion of the project and will be inspected by the construction inspector, for the City of Madison and monitored, maintained and repaired by the developer.
  8. Construction of sanitary sewer system, including lift stations, and all appurtenances, and connecting sewers to existing sanitary sewers as per plans approved by the City Engineer and the Mississippi Bureau of Pollution Control;
  9. Construction of water systems including water mains, services to all lots, fire hydrants, valves, any and all appurtenances per plans approved by the City Engineer and the MSDH.
- B. All underground utility street crossings shall be installed prior to construction of the base course of the streets, or in lieu thereof, such utility lines shall be directional bored and jacked under the street at a minimum of 18" below surface after the base course has been installed. When the subdivider is ready to install the final wearing surface on the streets, he/she shall not do so until he/she notifies the Public Works Director and receives written approval for the installation from said Public Works Director.
- C. It shall be the responsibility of the developer to mark or to cause to have marked the "As-built" location of all water and sanitary sewer services to individual lots. All services shall be made available so as not to disturb the street pavement, curb and gutter, or drainage structures when connections are made. All sewer services will extend to the property line a minimum of three feet (3') deep then turn at a 45° angle upward and extend two feet (2') above existing grade.
- D. After completion of all improvements and notification of this by the Developer's Engineer of Record, the Public Works Director and or the City Engineer shall make a final inspection of the required improvements.

#### IV. OPTIONAL IMPROVEMENTS

While not to be considered as required improvements, it shall be the policy of the Mayor and Board of Aldermen, that any additional improvement such as parks and open space, landscaping, suitably designed retaining walls, nature trails, pedestrian bridges over or around exposed waterways, and any similar improvements which in total would contribute to the livability and desirable visual appearance of the subdivision, are most highly recommended and encouraged. Any proposed improvements within existing or proposed street rights-of-way shall be subject to review by the City Engineer before being approved.

#### V. WARRANTY

One Year Warranty: Prior to final acceptance by the City of Madison of the dedicated utilities and streets, a one year warranty shall be given to the City by the Owner for all workmanship performed and materials installed. During the eleventh month, an inspection shall be made by the Owner and Public Works Director or City Engineer to determine any deficiencies to be corrected under warranty. All deficiencies shall be corrected and grounds repaired within thirty (30) days of this inspection or, at the discretion of the city, the bond, certified check or letter of credit shall be renewed for an additional year.

#### VI. INSPECTION AND CERTIFICATION OF REQUIRED IMPROVEMENTS

- A. The developer shall employ a registered professional engineer, to inspect the improvements as they are installed. This engineer shall then certify to the City Engineer that each improvement has been constructed in accordance with the approved plat and requirements of this Ordinance;
- B. Upon approval of the construction plans by the City Engineer, with such changes and alterations if any, as may be ordered, and after obtaining a Development Permit issued by the City of Madison Public Works Department, and a clearing and grubbing permit from the Planning Department, the developer may proceed with proposed improvements;
- C. Upon completion of construction of utilities and improvements, one (1) set of reproducible tracings and two (2) sets of blue prints of complete final plans, dated, signed and certified and stamped "As-built" by the engineer in charge shall be filed with the City of Madison, showing all features as actually installed, including materials, size, location, depth or elevation, numbers, end of lines, connections, ells, valves, storm sewer

drains, inlets, and all other pertinent information. All underground facilities, valves, services, and etc., shall be located from two (2) reference points which are approximately 90 degrees apart with distances shown on these plans. Final certifications shall be obtained from the MSDH and the Mississippi Bureau of Pollution Control. One (1) paper copy and one (1) digital copy in Auto Cad format of the above "As-built" plans and certifications shall be furnished the Public Works Director prior to final inspection. There shall be no connections made to such utilities serving the subdivision until the foregoing has been complied with and approved by the City Engineer;

- D. After completion of all improvements and notification by Developer's Engineer of Record, the Public Works Director and or the City Engineer shall make a final inspection of the required improvements under Section III of this Ordinance, and any other improvements to be accepted by the City after Certification by the Developer's Engineer that such improvements have been completed in accordance with approved plans and specifications. Unacceptable work, whether the result of poor workmanship, use of defective materials, damage through carelessness or any other cause found to exist prior to final acceptance of the work, shall be removed and replaced in an acceptable manner at no cost to the City of Madison. The City Engineer, acting as the duly authorized representative of the City of Madison and subject to the rules and regulations contained herein, shall decide all questions which may arise as to quality or acceptability of materials furnished or work performed. Such decisions may be appealed to the Mayor and Board of Aldermen and acceptance of each phase shall be binding upon the City subject to correction by the Developer and his contractor of any damage which might occur during subsequent work on other required improvements;
- E. If the City Engineer has verified that the contracted improvements are complete and free from defect, then upon receipt of the final plat, and any other statements and certificates and/or agreements, the Mayor and Board of Aldermen may vote to accept the dedication of any portion of the required improvements, provided that all statements and agreements specified above have been received for that portion of the improvements.



## **SECTION 11-4: DESIGN STANDARDS**

### **I. GENERAL PROVISIONS**

The provisions of this section set forth the standards by which subdivision developments will be functionally related to existing land uses, streets and utility systems and be so designed and located that the public health, safety and welfare of the community will be promoted and protected.

### **II. STABILITY OF LAND**

The subdivision of land affected by conditions undesirable to urban development shall not be approved until satisfactory evidence is provided by a registered professional engineer outlining the steps to be taken to overcome these conditions. The subdivision of land whose elevation is below the 100-year flood elevation but not within the floodway, as indicated by the latest printing of the National Flood Insurance Program Maps shall not be permitted for residential, commercial, or industrial uses until provisions have been made to either raise the elevation of the building site above such flood elevation or to raise the floor level of any structure to be erected a minimum of two feet (2') above such flood level by the use of piles or piers. If the building site is raised by filling, channeling, or a combination of both, it shall not restrict the flow of water in the floodway nor increase flood heights in the upper or lower regions of the subject drainage basin. No subdivision of land shall be permitted for residential, commercial or industrial uses unless it complies with adopted floodway regulations. (See Adopted Flood Damage Prevention Ordinance).

### **III. LOTS**

Except where lot design is accomplished by approved Planned Unit Development by the Official Zoning Ordinance of the City of Madison, all lots shall conform to the following requirements:

- A. The lot size, width, depth, shape and orientation, and the minimum building set-back lines of all uses shall be appropriate for the location of the subdivision and for the type of development and use contemplated as prescribed by the provisions of the Official Zoning Ordinance of the City of Madison;
- B. The subdividing of land shall be such as to provide, by means of a public or private street, each lot with satisfactory access to an existing public street;

- C. Double frontage lots should be avoided except where essential to provide separation of residential development from traffic arteries or to overcome specific disadvantages of topography and orientation.
- D. Corner lots shall be twenty feet (20') wider on both street frontages than interior lots;
- E. Minimum lot size must be exclusive of open drainage ditches. Open ditches will not be allowed along the front or side lot lines and only allowed on rear lot lines by special permission from the Mayor and Board of Aldermen;
- F. Side lot lines shall be as close as possible at right angles to straight street lines, and radial to curved street lines. (Each lot must front the minimum width distance required by the Official Zoning Ordinance of the City of Madison on a public dedicated street or approved private drive);
- G. Where platted lots and lands of a subdivision are subject to flooding as indicated by the delineation of the latest printing of the National Flood Insurance Program maps (NFIP), the limits of such areas subject to flooding shall clearly be indicated on the preliminary and final plats; minimum FFE shall be established by the engineer.
- H. As a usual practice, blocks should be no less than four hundred feet (400') or more than sixteen hundred feet (1,600') in length, except where it is necessary to secure an efficient use of land such as institutional, commercial or industrial areas, or desired features of the street pattern. Necessary variance in the length, shape and width of blocks may be granted in keeping with the provisions regulating such variances in this Ordinance;

Blocks shall be wide enough to allow two (2) rows of lots that are of the dimensions required by the Zoning Ordinance of the City of Madison. Where such is prevented by topographic conditions, the Mayor and Board of Aldermen may approve a single row of lots of adequate depth in keeping with the dimensional requirements of the zoning district wherein located.

#### IV. STREETS (DESIGN)

##### A. General

The design of streets shall conform to the minimum criteria below, and shall be considered in their relation to existing and planned streets, to topographic conditions, to public convenience and safety, and their appropriate relation to the proposed uses of the land to be served by such streets. The arrangement of arterial and collector streets in a subdivision shall adhere to the following:

1. Provide for the continuation of existing street in surrounding areas; or

Conform to the comprehensive plan, including the transportation plan for area development adopted by the Mayor and Board of Aldermen to meet a particular situation where topographical or other conditions make continuance or conformance to existing streets impractical.

Residential streets shall be so laid out that their use by through traffic will be discouraged. Where a proposed subdivision abuts or contains an existing or proposed arterial street, the Mayor and Board of Aldermen may require that the streets or lots be designed in such a way as to provide adequate protection of residential properties.

Where a proposed subdivision abuts or contains a railroad, freeway, limited or controlled access highway right-of-way, the Mayor and Board of Aldermen may require a street approximately parallel to and on each side of such right-of-way, at a distance suitable for the appropriate use of the intervening land. Such distances shall also be determined with due regard for the requirement of approach grades and future grade separations.

2. Half streets shall be prohibited.
3. Approved traffic calming devices shall be incorporated into all developments where directed by the Public Works Director or City Engineer.

B. Horizontal and Vertical Alignment

1. The maximum length of a minor street designed to have only one end open shall be 600 feet unless a greater length is required due to unusual topographic conditions or to property access limitations and approval is granted by the Mayor and Board of Aldermen. A turn around having a minimum diameter of seventy two feet (72') between curb faces and a minimum right-of-way of ninety six feet (96') shall be provided at the closed end of such streets.
2. The minimum stopping sight distance for horizontal curves on minor residential streets shall be two hundred feet (200').
3. Reverse curves shall be avoided when possible. Should it become absolutely necessary to utilize a reverse curve, a tangent of at least one hundred feet (100') shall be introduced between curves.
4. The minimum radius of curvature permitted on a horizontal curve shall depend upon design speed and corresponding friction coefficients developed by American Association of State Highway and Transportation Officials (AASHTO), but shall not be less than one hundred seventy five feet (175').
5. All changes in street grades shall be made with vertical curves. The minimum required stopping sight distance, as required by AASHTO, shall not be less than two hundred feet (200').
6. The maximum street gradient shall not exceed 8% except where steeper grades are mandatory due to unusual topographic conditions and approval is granted by the City Engineer. The minimum grade shall be such as to allow for adequate drainage without undue spread of storm water over the travel lane, but shall not be less than 0.5%.

### C. Street Width and Categories

#### Minimum Width

<u>Category</u>	<u>Street Type</u>	<u>Projected Count</u>	<u>Min. R.O.W.</u>	<u>Pavement Face of Curb to Face of Curb</u>	<u>Curb &amp; Gutter</u>
I	Principal Arterial	5,000	100'	Variable	Curb & Gutter
II	Minor Arterial	1,500 - 5,000	80'	42' min.	Curb & Gutter
III	Collector or Business	800 - 1,500	60'	36' min.	Curb & Gutter
IV	Local	0 – 800	50'	28' min.	Curb & Gutter

Where not shown in the comprehensive plan, including the transportation plan the arrangement of streets in a subdivision shall provide for the continuation of appropriate projection of existing major streets.

### D. Intersection Design

1. Streets shall be designed to intersect at approximately right angles. Skewered intersections shall be avoided and in no case shall the angle of intersection be less than 75 degrees.
2. Street intersections and approaches shall be designed on as flat a grade as possible. Street gradients within 100 feet of intersections shall not exceed 4%, and every reasonable effort shall be made to keep the gradient below 2%.
3. The minimum curb radius permitted at intersections shall be twenty feet (20') for local streets, and twenty-five feet (25') for collector streets, and for streets serving commercial or industrial developments.
4. Two streets intersecting the same street (T-intersection) shall be offset a minimum of one hundred fifty feet (150') (centerline offset).
5. Turning lanes shall be provided at heavily traveled intersections as determined by the City Engineer.
6. When possible, intersections on sharp horizontal curves or near the vertex of crest vertical curves shall be avoided.

## E. Typical Section and Pavement

1. All streets shall be designed with a two percent (2%) traverse slope.
2. Street pavement designs shall be based on consideration of the anticipated traffic volumes by weight, the subgrade soil, surface drainage, ground water and climatic conditions. The minimum pavement structural design shall be based on street category and subgrade California Bearing Ratio (CBR) as determined by a certified testing laboratory.

The thickness of pavement increments shall be determined according to accepted AASHTO design practice and pavement material equivalencies. Residential street surfaces shall be a minimum of 1½" Hot Bituminous surface course (SC-1, Type II) and five inches (5") of hot bituminous base course (BB-1), 1½" surface course shall not be placed until end of warranty or as required by the Public Works Director.

If 8" of lime treatment is made to the subgrade, the Black Base (BB-1) may be reduced to 4" in lieu of 5".

A Certified Test Report shall be submitted to verify percentage of lime required.

Asphalt thicknesses of the base course and wearing surface will be verified by coring test to be taken by the contractor at various locations as directed by the City Engineer.

At the time of placement, the air and pavement surface temperature limitations shall be equal to or exceed that specified in the following table:

### TEMPERATURE LIMITATIONS

<u>COMPACTED THICKNESS</u>	<u>SURFACE COURSES</u>	<u>BINDER LEVELING COURSES</u>	<u>BASE COURSES</u>
Less than 1 ½ in.	55° F	55° F	
½ in. to 2 ½ in .	50° F	45° F	45° F
More than 2 ½ in.	45° F	40° F	40° F

Materials and construction procedures shall comply with the latest edition of the "Mississippi Standard Specifications for State Aid Road and Bridge Construction."

The street subgrade shall be proof rolled and inspected by the Public Works Department as required.

Certified testing laboratory results and representative samples of all in place materials shall be required.

3. Concrete sidewalks shall be constructed or caused to be constructed in accordance with the City of Madison's designs requirements. Where sidewalks and roads intersect, the sidewalks will be constructed to meet the requirements of the American Disabilities Act (ADA). Specific ADA design applications should be discussed with the Public Works Director during the design phase of the project.

All sidewalks shall be a minimum of four feet (4') in width, 3000 pounds per square inch (psi) and 4-inches thick, and shall fall ¼ inch per foot sloped toward the roadway and have a minimum of two feet (2') grassed or landscaped median area separating the sidewalk and adjacent curb, unless otherwise approved in writing by the Public Works Director.

Sidewalks and (2') grassed or landscaped medians shall allow yards to drain to gutter without holding water.

Concrete mixes shall meet American Concrete Institute (ACI) minimum requirements for moisture, content, and contain appropriate additives when required.

Control joints ¼ slab thickness should occur no greater than 5'-0" off center construction joints with appropriate expansion material at the discontinuation of pours or where abutting existing paving or structures. In the case of existing open ditch streets, the actual location of the sidewalk shall be as directed by the Public Works Director.

Sidewalks shall be required on both sides of all local, collector or arterial streets as designated by the City's

transportation plans unless otherwise approved in writing by the Public Works Director.

All maintenance to sidewalks located within City right-of-way shall be the responsibility of the City of Madison, its agents or assigns.

These requirements shall only pertain to areas encompassed by the subdivision plat.

4. Gated private and/or public subdivisions shall be designed and constructed in accordance with City of Madison development regulations unless granted a variance by the Mayor and Board of Aldermen. The City reserves the right to refuse the dedication of a private street regardless of a previous variance being granted.

#### F. Street Names, Signing & Traffic Control

Proposed streets which are obviously in alignment with others already existing and named shall bear the names of the existing streets. In no case shall names of proposed streets duplicate or be confused with existing street names. Street names shall be subject to the approval of the Mayor and Board of Aldermen, Public Works, Public Safety and E-911.

Street names shall be stated and approved on the preliminary plat. All traffic signs and street name signs shall be purchased by the Developer and installed by or to the satisfaction of the City before final plat approval.

Traffic flow and direction shall be determined by the developer's engineer and shown on the preliminary plat.

Regulatory signs shall be in compliance with the current Manual on Uniform Traffic Control Devices (MUTCD) and shall be installed accordingly. Placement and number of signs shall be determined by the Public Works Director.



## V. STORM DRAINAGE SYSTEMS

### A. General

The design of storm water drainage systems shall insure adequate control of storm water runoff through the use of properly sized and positioned drainage structures including, but not limited to, curb and gutter, curb and grate inlets, raised grates, storm sewer pipe, box culverts, intersectional drains, open ditches, detention and retention areas and bridges. The design of storm drainage systems shall be in accordance with generally accepted engineering practice and the adopted stormwater management ordinance. Developers' engineers shall check with the city engineer to determine which software package will be acceptable to calculate runoff for storm sewer and detention basin design.

The design of any storm water drainage system shall be compatible with overall drainage plans developed for and approved by the City of Madison where applicable and the applicable stormwater detention requirements.

Drainage facilities shall be designed to prevent excessive runoff onto adjacent properties. Excessive runoff, over and above natural conditions includes quantities (cfs) and quality (erosion, siltation and chemical/biological contaminants). Existing ditches and creeks may be left in "natural" or unimproved condition only if the total flow is limited to the (natural or rural condition) and only with the approval of the Mayor and Board of Aldermen. If left natural, it should be noted on the final plat.

All developments must have DEQ or U. S. Army Corps of Engineers (COE) permit when required.

In no case shall slopes be steeper than 3:1 unless adequate slope protection is provided and approved by the City Engineer.

### B. Storm Drainage Pipe and Culverts

1. Pipe and culvert sizes shall be selected by use of computed hydrological and hydraulic data. Design flows shall be based on climatic factors such as rainfall intensity, duration, frequency and distribution and physiographic factors such as size, shape, and slope of drainage area, anticipated land use or cover, surface infiltration condition, soil type and topographical condition. Pipe selection shall be based on its hydraulic capacity

considering size, slope, and roughness characteristics as well as its tendency to become choked and the ability to clean and remove obstructions.

2. The minimum storm drainage pipe size shall be 15 inches.
3. Cross drains shall be provided to accommodate all natural water flow and shall be of sufficient length to permit construction of a full width roadway including side slopes. Headwalls or flared end section aprons as well as channel bottom and slope protection (rip-rap) shall be provided at the upstream and discharge end of the cross drain as required by the City Engineer.

C. Streets, Curb and Gutter and Inlets

1. The horizontal and vertical alignment of streets shall be compatible with the storm water runoff system and drainage design.
2. Street grades shall be coordinated with lot drainage as proposed in the grading plan, but shall be at or above the 100-year frequency urbanized flood level.
3. The hydraulic capacity of the curb and gutter shall be determined by generally accepted engineering procedure taking into consideration roughness, street cross-slope, and street gradient, and  $\frac{1}{4}$  spread of water over the travel lane. Inlet spacing shall be a maximum of 400'. All curb locations shall be proof rolled before pouring.
4. The hydraulic capacity of curb inlets shall be determined by generally accepted engineering procedure taking into consideration inlet geometry and characteristics of the gutter flow. Curb inlets shall be spaced so as to limit the spread of water to not more than one quarter of the street width during a design storm of ten (10) year return period and 15 minute duration. Inlets shall also be placed at all low points in the gutter grade, at intersections outside the radius where necessary to prevent gutter flow from crossing traffic lanes of an intersecting street, or at points of special concern as designated by the City Engineer. Inlets shall be provided so that surface water shall not be carried across or around any intersection nor for a distance of more than 400 feet in the gutter. When calculations indicate that curb capacities are exceeded at a point,

no further allowances shall be made for flow beyond that point, and basins shall be used to intercept flow at that point. Surface water drainage patterns shall be shown for each and every lot and block.

D. Effect on Downstream Drainage Areas

The Developer's Engineer shall study the effect of each subdivision on existing upstream and downstream drainage facilities bordering the area of the subdivision. City of Madison drainage studies, if applicable, together with such other studies as shall be appropriate, shall serve as a guide to needed improvements. Where it is anticipated that the additional runoff incident to the development of the subdivision will overload an existing downstream drainage facility, the City Engineer may recommend withholding approval of the development until provisions have been made for the improvement of said potential condition through stormwater detention or some other acceptable means. No development shall be approved unless adequate drainage will be provided to an adequate drainage water course or facility.

E. Bridges and Box Culverts

The structural design of all box culverts or bridges shall conform to the standard plans of the Mississippi State Highway Department for a load capacity of HS-20 minimum. Bridges, where required, shall be constructed of reinforced concrete or structural steel with a reinforced concrete deck. No mud sills or timber grills will be permitted for bridge foundations. All bridges shall be provided with substantial guard rails and sidewalks. The design and look of the bridge must be approved by the Mayor and Board of Aldermen.

F. Material Specifications

All material used in the construction of storm drainage systems, shall conform to the following minimum specifications:

1. Concrete shall be ready mix as per American Society of Testing Materials (ASTM) C-94 which will develop a minimum compressive strength of 3,000 psi at 28 days conforming to ASTM C-31.
2. All reinforcing steel shall conform to ASTM A-15, Grade 60.
3. Bricks used in the construction of inlet boxes and manholes shall conform to ASTM C-32, Grade MA.

4. All Portland Cement shall conform to ASTM C150, Type 1.
5. All sand shall conform to ASTM C-33.
6. All mortar shall consist of 1 part cement, 2 parts sand, and 10% lime (by volume).
7. All culvert pipe shall be reinforced concrete pipe. This pipe shall conform to ASTM C-76, and be Class III minimum, standard strength, bell and spigot or tongue and groove unless approved by the Mayor and Board.

All lifting holes are to be sealed with rubber plugs. The use of Polyvinyl Chloride (PVC) (Perma-Loc), and plastic pipe manufactured by Advanced Drainage Systems, Inc. (ADS) or other material on side or rear lot lines outside the street right-of-way will be acceptable only if approved by the Public Works Director or City Engineer.

8. Rubber gaskets shall be used on all round concrete pipe and conform to the requirements of ASTM C-443.
9. Precast concrete manholes shall conform to ASTM C-478, and of eccentric form.
10. Castings shall conform to ASTM A-48. Manhole covers and rings shall have a combined weight of not less than 300 lbs. and be suitable for traffic loads.

G. Installation

1. Any materials delivered to a job site defective, damaged, or not meeting code, shall be rejected by the City of Madison and shall not be used for construction and shall be removed from the job site at once. If installed prior to detecting substandard material, it shall be removed, and approved material installed at the developer's expense.
2. All concrete pipe, catch basins, curb inlets and headwalls shall be installed in strict accordance with the manufacturers' recommendations and/or all applicable provisions of the Mississippi State Highway Department's "Standard Specifications for Road and Bridge Construction."
3. All pipe shall be laid to alignment and grade with the use of a laser.

4. No more trench shall be opened than can be effectively utilized in a day. Excavations to be left open during non-working hours shall be kept to a minimum. Such openings shall be adequately protected and marked to prevent injuries until covered.
5. Backfilling shall be carried out as follows:
  - A. In areas under streets, walks or parking areas, the backfill shall be placed in 6" lifts and compacted to a minimum of 95% density by ASTM D-698 (Standard Proctor) using mechanical devices designed for that purpose.
  - B. In all other areas, the backfill may be placed in 12" lifts compacted to 90% density by ASTM D-698 (Standard Proctor).
  - C. Developer shall be responsible for trench settling during the warranty period.

#### H. Design of Storm Drainage Systems

The design of storm water drainage systems shall insure adequate control of storm water runoff through the use of properly sized and positioned, to include side and rear lot lines if needed, drainage structures including but not limited to curb and gutter, curb and grate inlets, raised grates, storm water sewer pipe, box culverts, intersectional drains, open ditches and bridges.

The design of all storm water drainage systems (main channels) shall be in accordance with the City of Madison's plan for the basin in which the development is located and shall provide for potential affects to upstream and downstream developments in the basin. Drainage facilities shall be designed to meet all city ordinances and prevent excessive runoff onto adjacent properties.

Cross drains shall be provided to accommodate all natural water flow and shall be of sufficient length to permit construction of a full width roadway including side slopes. Headwalls or flared end sections, aprons, channel bottom and slope protection shall be provided at the upstream and discharge end of the cross drain as required by the Public Works Director or City Engineer.

The following storm water design frequencies shall be used in computing design distribution:

100-Year: All major streams, channels, bridges, open ditches or drains within the jurisdictional limits of Madison.

50-Year: Minor streams, channels, open ditches or subdrains tributary to main streams.

25-Year: Sidedrains and miscellaneous culverts where flooding would cause minor adverse affects.

No individual, partnership or corporation shall deepen, widen, fill, reroute or change the location of any existing ditch, stream or drainage canal without first submitting plans and obtaining written permission from the COE, Public Works Director or City Engineer.

The following design criteria shall apply to all storm drainage pipe and culverts:

1. Calculation of design flows for drainage areas less than ten (10) acres: All pipes, sidedrains and open ditches shall be designed using the applicable frequency curve. The minimum storm drainage pipe size shall be fifteen inches (15") and shall be obtained using the Rational Formula (below).

Storm sewer design velocities shall not exceed ten feet (10') per second.

For small, compact drainage basins less than ten (10) acres, the peak runoff shall be computed from the Rational Formula.

RATIONAL FORMULA:  $Q = CiA$  (cfs)

<u>SYMBOL</u>	<u>UNIT</u>	<u>DESCRIPTION</u>
Q	cfs	Discharge Computed by Rational Method
C	*	Coefficient of Runoff
I	in/hr	Intensity of Rainfall
A	Acres	Area of Drainage basin

\* The value of "C" obtained from Table A (below).

TABLE "A"			
RUNOFF COEFFICIENT "C"			
VALUE OF "C"			
TYPE OF AREA	SLOPES LESS THAN 3.5%	SLOPES 3.5% TO 5.5%	SLOPES GREATER THAN 5.5%
Woodland	0.25 - 0.35	0.35 - 0.70	0.70 - 0.80
Grassed Areas	0.35 - 0.45	0.45 - 0.70	0.70
Paved (Imperv) Areas	0.95	0.95	0.95
Residential*	0.55 - 0.65	See Note	See Note
Commercial*	0.70 - 0.90		

\* Values of C for these areas are computed as weighted average of grassed areas and impervious areas.

$$\text{Weighted "C"} = \frac{(C_{\text{grass}}) \text{Grass Area}}{\text{Total Area}} + (C_{\text{imperv}}) \frac{\text{Imperv Area}}{\text{Total Area}}$$

For average residential development the value of "C" shall be taken as 0.75

FORMULA NUMBER 1:

TIME OF CONCENTRATION:

The following formula shall be used to calculate the time of concentration (min.) and rainfall intensity (in/hr) for use in the rational method.

$$t_c = \frac{10 \times L^{0.37}}{17^C \times S^{0.21}}$$

where:

$t_c$  = time of concentration, minutes

$L$  = overland flow length, feet

$S$  = average slope of length of flow, (in percent)

$C$  = runoff coefficient (rational)



The rainfall intensity "I" in inches per hour shall be estimated from Chart Number One (1) by using Formula Number One (1) to estimate the duration in minutes.

Table "B" shall be used as a "rough" check on calculation of the time of concentration.

TABLE "B"

VELOCITY ESTIMATE GUIDE

<u>AVERAGE SLOPE OF CHANNEL FROM FURTHEST POINT TO OUTLET, IN PERCENT</u>	<u>AVERAGE VELOCITY FEET PER SECOND (FOR SMALL, SHALLOW CHANNELS)</u>	<u>AVERAGE VELOCITY FEET PER SECOND (FOR MAIN DRAINAGE CHANNELS IN NATURAL STATE)</u>
1 to 2	2.0	3.0 - 5.0
2 to 4	3.0	5.0 - 9.0
6 to 10	5.0	

<u>AVERAGE VELOCITY FEET PER SECOND (FOR OVERLAND FLOW)</u>			
<u>SLOPE IN PERCENT</u>	<u>WOODLANDS (UPPER PORTION WATERSHED)</u>	<u>PASTURES (UPPER PORTION WATERSHED)</u>	<u>NATURAL CHANNEL (NOT WELL DEFINED)</u>
1 - 3	1.0	1.5	1.0
4 - 7	2.0	3.0	3.0
8 - 11	3.0	4.0	5.0
12 - 15	3.5	4.5	8.0

# I-D-F Curve - madison.idf

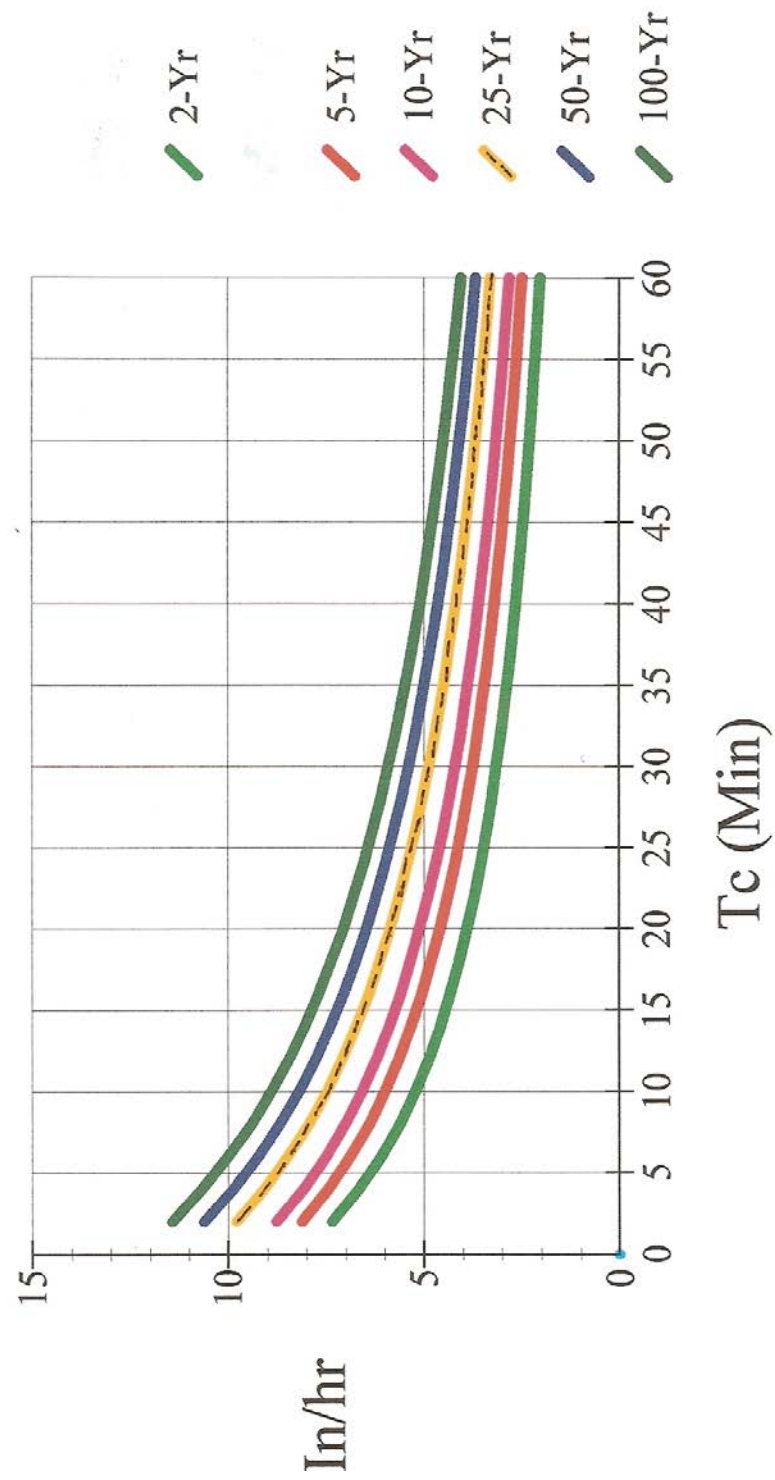


CHART 1

Calculation of design flows from drainage areas greater than ten (10) acres: Design flows shall be obtained by using the following Charts 2, 3, and 4 entitled "Flood Frequency Curves for Urbanized Streams."

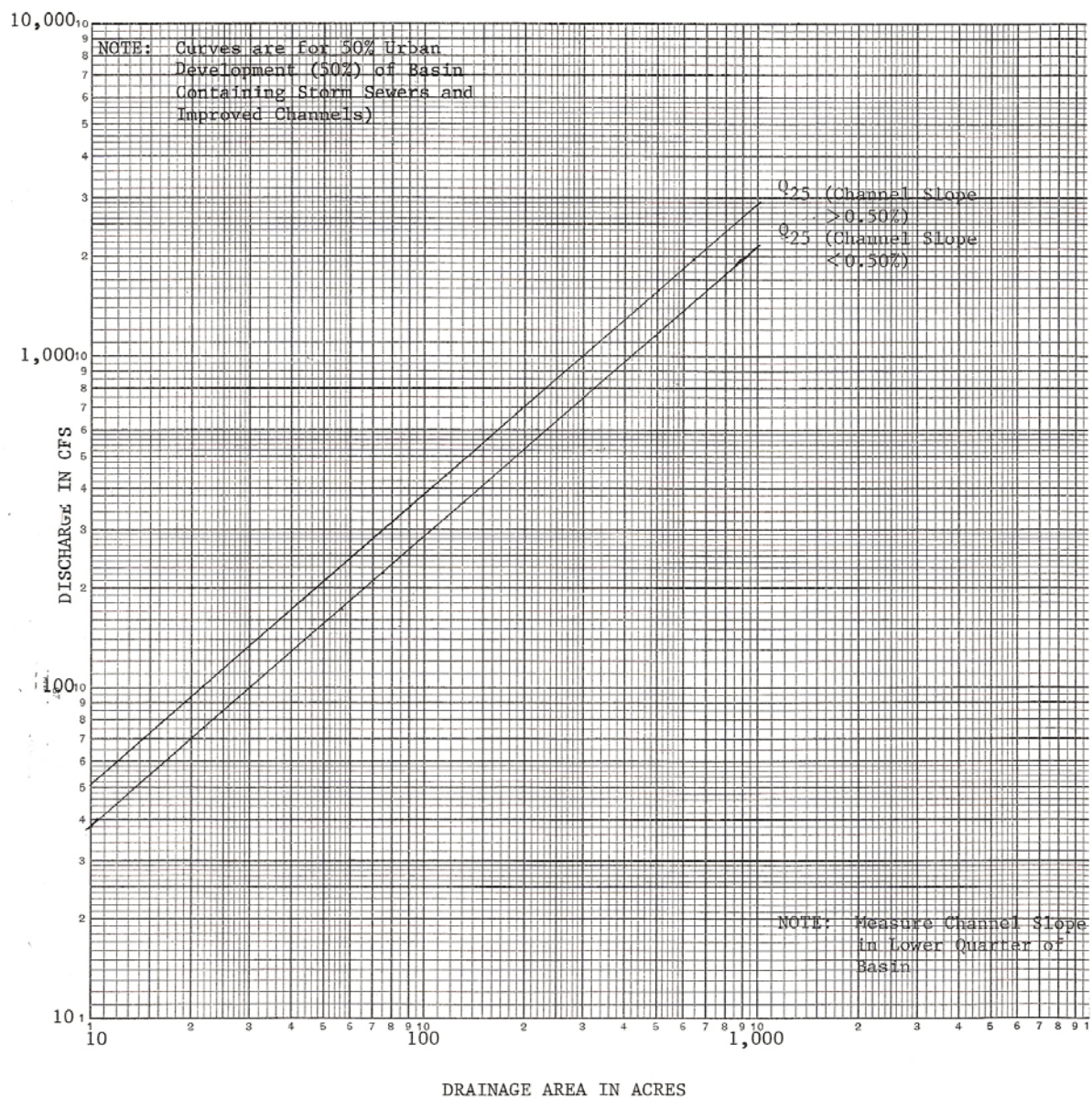
All pipes, sidedrains and open ditches shall be designed using the applicable frequency curve. Storm sewer design velocities shall not exceed ten feet (10') per second.

The following requirements shall apply to the construction of streets, curb and gutter and inlets.

1. The horizontal and vertical alignment of streets shall be compatible with the storm water runoff system and drainage design.
2. Street Grades shall be coordinated with lot drainage as proposed in the grading plan. Street grades shall be above the 100-year frequency flood level.
3. The hydraulic capacity of curb inlets shall be determined by generally accepted engineering procedures taking into consideration roughness and street cross slope. The design depth of flow in the curb and gutter section shall not exceed 4".
4. The hydraulic capacity of curb inlets shall be determined by generally accepted engineering procedures taking into consideration inlet geometry and characteristics of the gutter flow. Curb inlets shall be spaced to limit the spread of water to not more than one quarter ( $\frac{1}{4}$ ) of the street width during a design storm of ten (10) year return period and fifteen (15) minute duration. Inlets shall also be placed at all low points in the gutter grade, at intersections where necessary to prevent gutter flow from crossing traffic lanes of an intersecting street or at points of special concern designated by the Public Works Director or City Engineer.
5. Finished grades of all buildings shall be two feet (2') above the 100-year flood elevation.

The structural design of all box culverts or bridges shall conform to the standard plan of the Mississippi State Highway Department for a load capacity of HS-20 minimum.

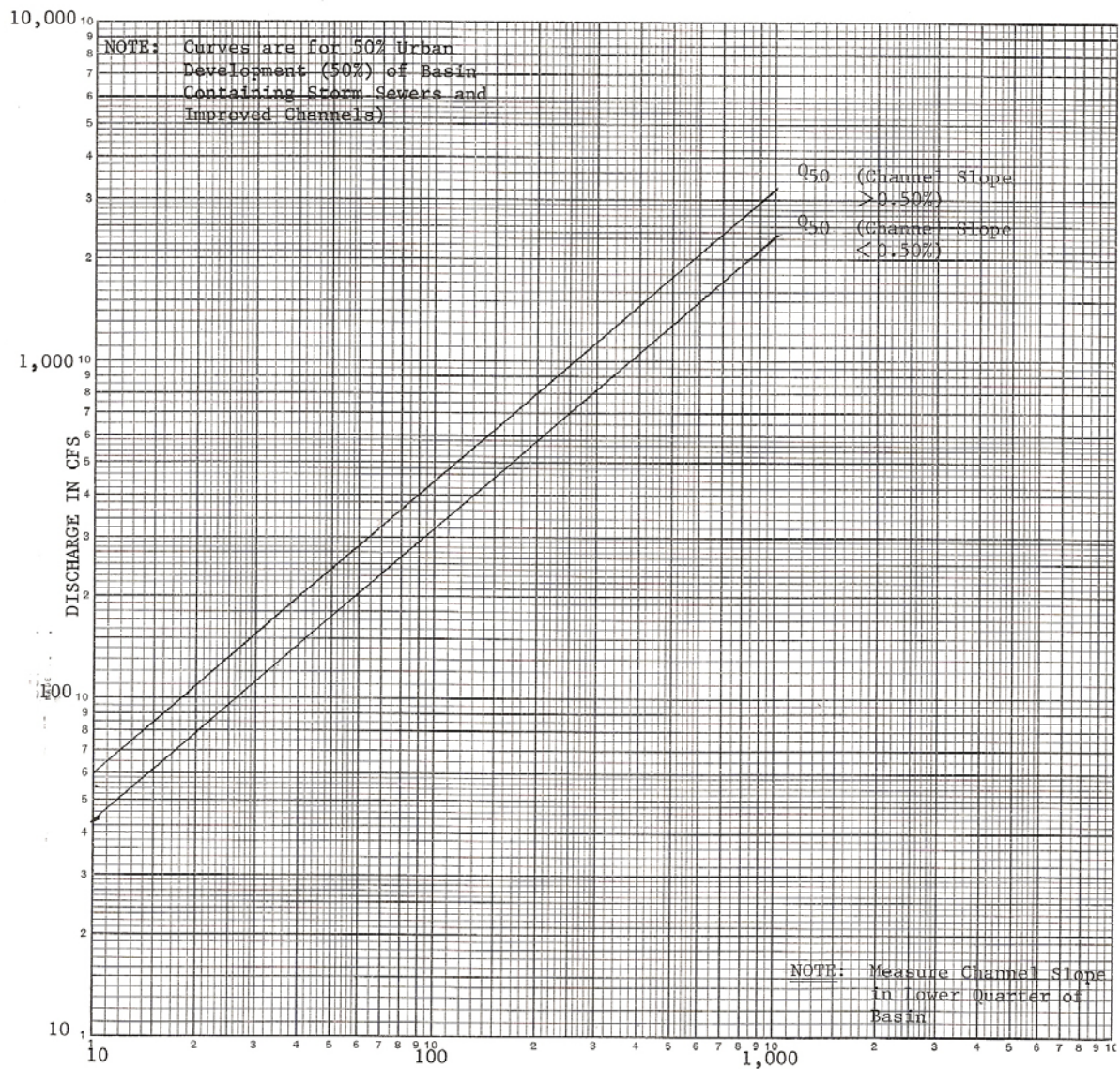
All culverts, cross drainage and storm sewers shall be constructed in accordance with the technical specifications contained herein.



25 YEAR FLOOD-FREQUENCY CURVES FOR URBANIZED STREAMS

CHART 2



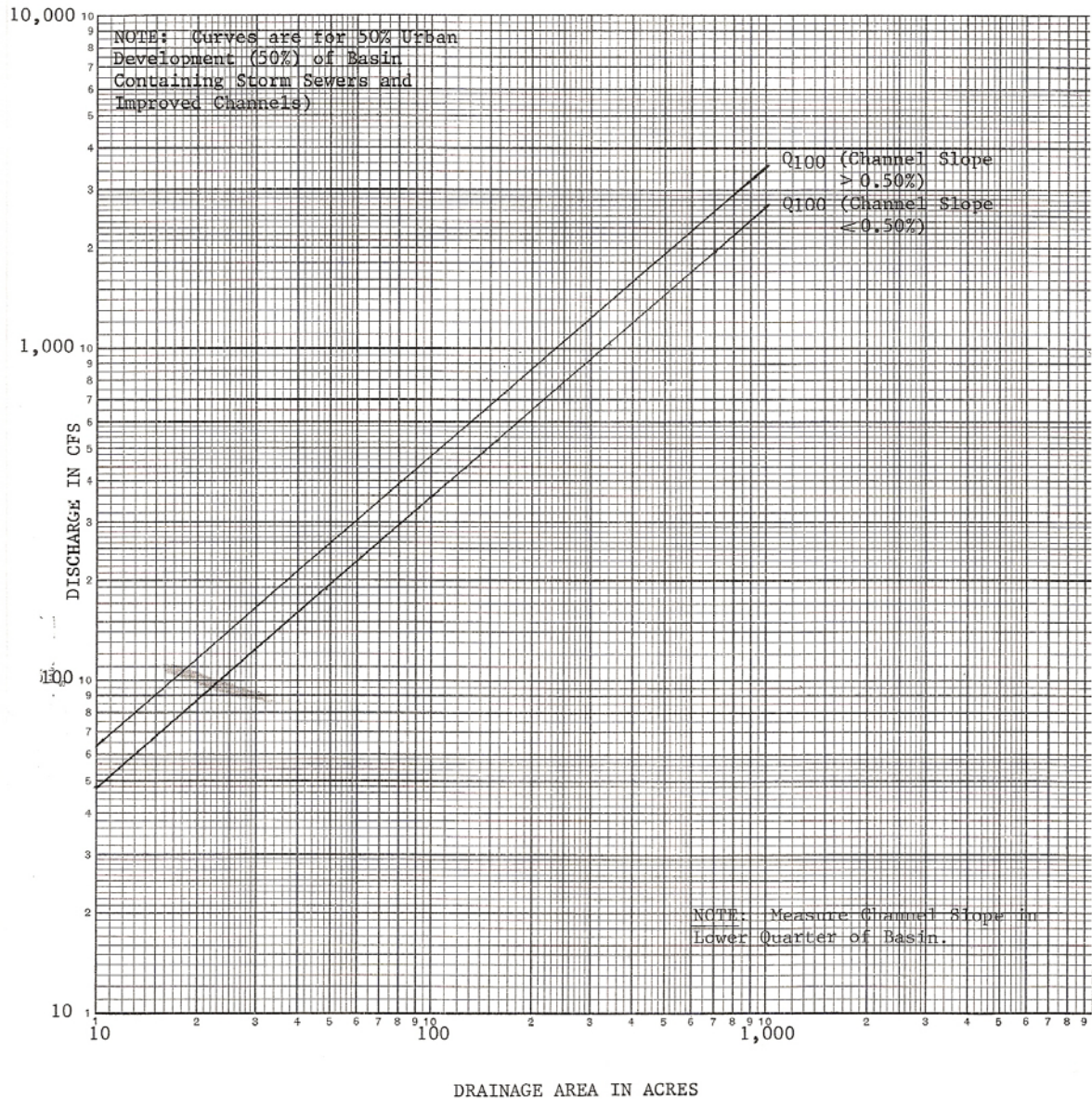


DRAINAGE AREA IN ACRES

50 YEAR FLOOD-FREQUENCY CURVES FOR URBANIZED STREAMS

CHART 3





100 YEAR FLOOD-FREQUENCY CURVES FOR URBANIZED STREAMS

CHART 4

## VI. SANITARY SEWER SYSTEM

### A. Design Criteria

The minimum design standards of the sanitary sewer system for each subdivision shall conform to the following:

1. Minimum pipe size - 8 inches. Interceptors shall be sized for full development of the entire drainage basin and other areas which may be practically pumped to the interceptor;
2. Minimum pipe slope - 0.0400% for 8 inch pipe;
3. Minimum velocity - 2 feet per second;
4. Maximum velocity - 9 feet per second;
5. Maximum depth flow –  $\frac{1}{2}$  pipe diameter after multiplying by peak factor;
6. Waste per person - 120 gallons per day including infiltration;
7. People per dwelling unit - four (4);
8. Peak factor - 3.5 minimum;
9. Maximum manhole separation - 400 feet with manholes required at each grade change and alignment change;
10. Minimum cover - three (3) feet. Depth as necessary to serve the proposed area and as needed to serve remainder of drainage basin;
11. Minimum stubout diameter - 6 inch, one stubout located in center of each lot extending to the property line a minimum of three feet (3') deep then turn at a 45° angle upward and extend two feet (2') above existing grade.
12. Top manhole elevation - minimum shall be to finished grade or 1' above 100-year flood elevation whichever is greater. In underdeveloped areas, tops shall be minimum of 30" above ground elevation.
13. Sewer mains shall be located on opposite sides of the street from water mains where possible.
14. Sewer mains shall be laid at least 10 feet horizontally and 18 inches vertically from any water main. The top of the sewer line should be at least 18 inches from the bottom of the water line. Sewer lines should always be constructed below water lines.
15. Where local conditions prevent adequate horizontal and vertical separations, DEQ may allow the sewer line to be laid closer to the water line if supported by adequate data from the design engineer.

16. Sewer and water lines should be shown on the same layout sheet whether water lines are existing or proposed.

**B. Pump Stations**

The use of sewer lift stations should be minimized. However, when sewer lift stations cannot be avoided, they should be designed for easy maintenance, maximum operating life, and adequate pumping capacity. The designed calculations must show flow rates and velocities for the pump station and force main. Minimum requirements for pump stations include:

1. Minimum of 12 months warranty on pumps from start-up date. Minimum of two (2) pumps, each of which has capacity to handle the expected peak load. Pumps to operate at non-overloading condition across full range of pump curve;
2. Adequate controls with overload and lightning protection, phase failure protection, alternators and running time meters. Emergency transfer switch and powertite receptacle made by Appleton or approved equal;
3. Adequate wetwell and single pump capacity for calculated peak flow. Wetwell, discharge piping/valves and force mains shall be sized for entire drainage basin and other areas which may be practically pumped to basin;
4. Minimum flow rate of 2½ feet per second in force main, with a maximum of 6 feet per second with dual pump operation;
5. Adequate vented wet well;
6. Valves on discharge lines shall be located outside of wetwell in a pit with a drain pipe (gate and check);
7. Furnish stainless steel or fiberglass reinforced I-Beam guide rails with stainless steel lifting chains on submersible pumps;
8. Pump station sites shall be fenced to meet city requirements. Driveway and area inside fence shall be a minimum of 2½" of asphalt.
9. Supervisory Control and Data Acquisition (SCADA) required on all sewer lift stations 5 HP and above. SCADA to be compatible with existing city SCADA system.

**C. Material Specifications**

All material used in the construction of the sanitary sewer system shall conform to the following minimum specifications:



1. Gravity Lines

The pipe shall be ductile iron pipe, American National Standards Institute (ANSI) standard specification A-21.50 with rubber gasket joints; or PVC ASTM D-3034, SDR-26.

Ductile iron pipe shall be used if ground cover will be less than three feet (3').

2. Manholes/Wetwells

Sanitary sewer manholes/wetwells shall be precast concrete with reinforced riser sections, an eccentric cone or flat slab top section and a base section. Riser section shall conform to the latest edition of ASTM Serial Designation C-478. The interior surfaces of all manholes/wetwells shall be coated with coal tar epoxy in strict accordance with the coating manufacturers' recommendations. Joints for precast manhole/wetwell sections shall be a combination of rubber gaskets, preformed bituminous joint compound, and a mastic joint material.

3. Manhole Frames and Covers

Frames and covers for manholes shall conform to ASTM Standard Specification A-48 for "Gray Iron Castings, Class 25", castings shall be manufactured to the sizes and shapes as illustrated on the construction drawings or as specified by the manufacturer's model number.

4. Wetwell/Valve Pit Frames and Covers

Each wetwell and discharge piping valve pit shall have aluminum access hatches. The frame shall be cast in a concrete cover. Minimum hatch openings shall be 36" x 36" for wetwells and 30" x 30" for valve pits or larger as required for proper access to the equipment. Hatches shall be equal to Haliday Series H except when subject to traffic, a H-20 loading design is required.

5. Manhole Steps

Steps for manholes shall be the plastic coated corrosion resistant Perma Step 100-2 as manufactured by Utility Products, Incorporated of San Antonio, Texas, or Oliver Tire and Rubber Company of Oakland, California, rubber encased "Surefoot" Manhole Step, or equal.

6. Force Mains

The pipe shall be constructed of ductile iron pipe, ANSI Standard Specifications A-21.50 with rubber gasket joints or PVC meeting requirements of commercial standard CS-256-63. The PVC pipe shall be pressure rated at 160 (or 200 psi) with a standard dimension ratio (SDR) of 26 (or 21 for class 200) for both barrel and joint dimensions. The joints shall be the factory installed heavy duty type elastomeric gaskets manufactured in conformance with ASTM F- 477. Locate wire #12 solid copper.

7. Air Release Valves

Air release valves shall be installed at all high points on force mains. Valves shall be equal to those by Crispin or APCO for the particular application needed. Valves shall be placed in a concrete pit as per City's Standard Details.

8. Pumping Equipment

All pump stations shall be duplex stations with non-clog solids pumps capable of passing a 3" diameter solid. Submersible pumps shall have two (2) mechanical seals on the motor. The lower one outside the motor and protecting the upper one which is in an oil filled chamber. Moisture detection probes in the oil filled seal chamber shall be connected to the control panel to indicate the presence of moisture in the seal chamber. Thermal overload protectors shall be embedded in the motor windings and connected to the starter to disconnect the motor in the event of overload. Motors shall be approved by Underwriters Laboratories for use in an explosive atmosphere. Motors shall be three phase non-overloading throughout the entire range of pump curve with a duplex combination disconnect switch and magnetic starter having bi-metallic thermally delayed adjustable overload protection. The controls shall be a duplex pumping panel complete with combination starters with circuit breakers, automatic alternator, mercury float switches or air bubblers for liquid level control, running lights, pump failure lights, three (3) running time meters, lightning arrestor, condensation heater, panel lighting, GFI duplex outlet, engraved plastic labels and main circuit breakers. Moisture sensor relays with lights indicating seal failure, all in NEMA 3R dead front enclosure with H-O-A selector switches in cover shall be provided. A red flashing exterior high water alarm light shall also be required in a visible location at the station site. Manual operated transfer switch with powerite receptacle made by Appleton or approved equal.

Conduit for floats and each pump that lead from the wetwell to control panel shall be a minimum of 1½" diameter.

D. Installation

All installations, construction, backfilling and start-up operations shall be in strict accordance with the manufacturer's recommendations and the requirements of the City Engineer. Three inch (3") or smaller discharge pipe from the base of pump inside wetwell to the outside of valve pit shall be # 304 stainless steel.

E. Testing

1. General

Before acceptance, each section of line between manholes or such other length as determined by the City Engineer to be suitable, shall be thoroughly inspected and any defects in workmanship shall be immediately corrected.

2. Infiltration Testing

Infiltration testing of the completed gravity sewer system (after backfilling) shall be conducted. The testing shall be conducted by the CONTRACTOR in the presence of the Public Works Director or City Engineer. The Engineer shall be given at least 24 hours notice before tests are to be conducted. If the ground water table is at least one foot above the top of the pipe at all points, the infiltration test shall be used. Otherwise, the air test shall be used. Only those sections under the groundwater table shall be tested by the infiltration test.

3. Infiltration Test

The infiltration test shall be conducted between adjacent manholes. The outlet pipe on the downstream manhole shall be plugged and tested for water tightness to the satisfaction of the Public Works Director or City Engineer. The accumulated depth of water in the downstream manhole shall be read at 12 hour intervals for two days and the infiltration rate calculated from the data obtained. Any section exceeding an infiltration rate of 200 gallons per day per inch diameter per mile shall be re-laid. If the leakage in any reach exceeds the allowable maximum, the reach shall be re-tested after the leaks are repaired. This means that the Contractor shall locate and repair leaks as necessary to pass the infiltration test.

4. Air Test Specification

The sewer line to be tested shall be tested between manholes. The line shall be sealed at both ends. The seal at one end shall have an orifice through which to pass air into the pipe. An air supply shall be connected to the orifice at one end of the line. The air supply line will contain an on-off-gas valve and a pressure gauge having a range of 0 to 15 psi. The gauge shall have minimum divisions of .10 psi and shall have an accuracy of more or less .04 psi. Pressuring equipment should include a regulator or relief valve to avoid over pressuring and damaging an otherwise acceptable line. The pipe line under test shall be pressurized to 4 pounds per square inch gauge (psig). The line will be allowed to stabilize between 4 psig and 3.5 psig for a period of no less than 5 minutes. If necessary, air should be added to the line to maintain the pressure above 3.5 psig. After stabilization period, the gas valve shall be closed. When the line pressure drops to 3.5 psig, commence timing with a stop watch. The stop watch should be allowed to run until such time as line pressure drops to 2.5 psig. Then

the watch should be stopped and the time lapse compared with the allowable time lapse in Table I, which follows for the pipe size used. If the time lapse is greater than the allowable, the section undergoing testing shall have passed, and the test may be discontinued at that time. If the time is less than the allowable, the line has not passed the test and the Contractor will be required to find the leaks, repair them and re-test until the section passes at his own expense.

**TABLE 1**

**TIME IN SECONDS REQUIRED FOR PRESSURE TO DROP TO 2.5 PSIG**

(Based on 0.003 cfm per sq. ft. and 2.0 cfm)

Length of Test Sect. L in ft.	PIPE DIAMETER D IN INCHES													
	4	6	8	10	12	15	18	21	24	27	30	33	36	39
25	4	16	22	28	93	62	89	121	158	200	248	299	356	418
50	10	33	43	55	158	124	178	243	317	401	495	599	713	837
75	19	49	66	83	240	186	267	364	475	601	743	898	1020	1105
100	30	66	87	95	305	248	375	525	639	765	851	935		
125	41	82	109	110	349	372	510	650	680					
150	60	98	131	132	381	455	610							
175	79	115	153	154	413	575								
200	86	131	174	176	436									
225	95	147	196	294	459									
250	109	164	218	338										
275	113	189	240	382										
300	122	197	262											
350	131	213	306											
400	139	230												
450	147	246												
500	156													
500	165													
600	174													
640	183	246	306	382	459	575	610	650	680	765	851	935	1020	1105

**5. Deflection Testing**

100% of the PVC gravity sewer shall be tested using a "go, no-go" mandrel which is sized to such dimensions that it will not "go" when encountering a deflection greater than 5%.

**6. Lamping**

Pipeline alignment shall be checked with a light of sufficient intensity to be seen from one manhole to the next. A full circle of light must be seen from each direction.

7. Force Main Pressure Testing

Force mains shall be tested in same manner as water mains.

8. Lift Station Start-Up/Performance Testing

All stations shall be started up and demonstrated by an authorized representative of the manufacturer. The pumps, controls, and discharge piping and valves shall be fully checked and adjusted for all operational sequences. A performance test shall be made on each pump to determine the actual field pumping rate and Total Dynamic Head (TDH). O & M Manuals, Lift Station Data Sheet and Pump Repair Manual shall be provided to the City.

F. Flushing

The completed gravity flow system shall be free of all mud, siltation and other foreign matter deposited or collected during construction. Flushing shall commence at the upstream end of the completed system and continue downstream manhole to manhole. Only water from an approved source will be permitted. Water used in flushing will not be permitted to enter into the existing system but shall be disposed of in a manner acceptable to the City Engineer. Flushing shall be accomplished prior to testing should the collected matter be sufficient in quantity to obstruct or effect the testing. Flushing will not be required in those sectors of the installed pipes and manholes where the exfiltration tests have adequately cleaned the mains.

VII. WATER SUPPLY SYSTEM

A. Design

Water mains shall be designed, constructed and properly connected (hot tapped) with the public water supply system in such a manner as to adequately serve all lots shown on the subdivision plat for both domestic and fire protection services and will adhere to the minimum requirements set forth herein below:

1. Water distribution systems shall be designed using the Hardy Cross Method. The Hazen-Williams formula shall be used in computing head loss. The maximum C value to be used is 120.
2. Water distribution systems shall be designed for the peak hour flow or the maximum day flow plus fire flow whichever is greater.
3. The water distribution system shall be designed so that the following range of dynamic pressures are provided: 50 psi to 80 psi for average daily flows; 20 psi to 30 psi for peak hour flows; 20 psi to 50 psi for maximum daily flow plus fire flow. The minimum dynamic pressure at any point shall be 20 psi, per MSDH.

4. The maximum design velocity shall not exceed 5 fps.
5. Water distribution systems shall be laid out on a grid system with cross connections at cross streets. Dead end pipes shall be avoided whenever possible.
6. Water mains shall be located on opposite sides of the street from sewer mains where possible.
7. Water mains shall be laid at least 10 feet horizontally and 18 inches vertically from any sanitary sewer or manhole. The bottom of the water line should be at least 18 inches from the top of the sewer line. Water lines should always be constructed above sewer lines.
8. Where local conditions prevent adequate horizontal and vertical separation, the Division of Water Supply may allow the water line to be laid closer to the sewer line if supported by adequate data from the design engineer.
9. Water and sewer lines should be shown on the same layout sheet whether sewer lines are existing or proposed.
10. All water users should be individually metered.
11. Valves shall be installed at each intersection or change in pipe size, and shall be placed so that no single case of pipe breakage shall require shut-off from service of an artery or more than 500 feet of pipe or as directed by the Public Works Director. All valves shall be tied to mains with anchor couplings. The locate wire shall be placed on the outside of the valve riser/box.
12. Fire hydrants shall be placed at all intersections and at intervals not to exceed 500 feet in residential districts and 300 feet in commercial districts. Fire hydrants in commercial districts shall be on both sides of the street. They shall be located within one foot (1') of side lot lines. Valves shall be installed on each fire hydrant. Both valves and hydrant shall be installed with ductile iron anchor couplings to the main.  
  
Fire hydrants shall be set with the break away bolts at curb height or as directed by the City.
13. Mains shall be a minimum of 6" in diameter where length is 600 feet or less and must be gridded or looped from more than one source of supply wherever possible as directed by the Public Works Director. Mains installed for distances greater than 600 feet shall be gridded or looped with more than one source of supply. The size shall be determined by using accepted engineering calculation methods as approved by the City Engineer.
14. Service line shall be installed from the main to the property line and be a minimum of one (1) inch in size.

15. The service assembly shall consist of a curb stop marked-with a "T" post and service line exposed 3' above existing grade. Meter boxes equal to the number of lots shall be delivered to the City prior to final plat approval. The calculating method for areas of higher density development potential, based upon the zoning of the properties to be served, shall reflect the higher density development and the main size increased, if conditions warrant. The requirements for water distribution systems serving commercial and industrial developments shall be determined by engineering analysis based on specific water requirements for the type of use intended or those required by the height and density permitted by the zoning classification of the property, whichever is greater.

16. Newly installed systems shall be pressure tested at 150 psi for 24 hours under the inspection of the Public Works Director or Engineer. Allowable leakage shall not exceed ten (10) gallons per twenty-four (24) hours per inch of diameter per mile of pipe at 150 psi. All newly installed systems shall be sterilized and must pass bacteriological tests to the satisfaction of the City Engineer, and the Mississippi State Board of Health, prior to placing said system in service, or accepted by the City.

All water used in hydrostatic tests shall be potable water; containers holding water shall be sterile. It shall be the responsibility of the developer or his Contractor, to reimburse the City of Madison for tie-ins to existing mains, if made by the City. Where possible, water mains shall be located in the street right-of-way at least two feet (2') but not more than four feet (4') from the edge of the curb or pavement or as approved by the Public Works Director or the City Engineer.

17. All taps shall be made using the "Hot Tap" method unless approved by the Public Works Director.

B. Material Specifications

All material used in the construction of the water supply system shall conform to the following minimum specifications:

1. Pipe

a. Ductile Iron Pipe

Ductile iron pipe shall be water pipe manufactured in accordance with the latest applicable standards issued by ANSI Standard Specification A-21.51. The metal thickness of ductile iron pipe shall be as specified in ANSI Standard Specifications A-21.51, for the various classes listed. Unless special bedding conditions are specified by the Engineer, the maximum depth of cover for the various classes of ductile iron pipe shall not exceed that by the manufacturer or approved by the City Engineer. All ductile iron pipe shall be coated outside with a standard bituminous coating and lined inside with a cement mortar lining in accordance with ANSI and American Water Works Association (AWWA) C104/A21.4

b. Polyvinyl Chloride (PVC) Pipe

PVC pipe shall conform to all of the latest revisions of the following specifications:

ASTM SPEC D2241

National Sanitation Foundation Testing Laboratories (NSF)

The pipe shall bear the NSF seal of approval and shall be designed to carry potable water at pressures (including surges) up to the maximum class rating. Material used to produce the pipe, couplings and fittings shall conform to AWWA C-900 Class 150 and ASTM D1784, Type 1, Grade 1, 2,000 psi design stress and PVC 1120. Pipe shall not exceed 40 feet in length and be pressure rated, as required by the City Engineer, and have a stop mark on the plain end of each piece of pipe supplied. Pipe supplied shall be of the quality manufactured by Certain-Teed, Can-tex, or an approved equal. Pipe joints shall be of the integral belled type elastomeric gaskets, conforming to AWWA C-900.

c. Gate Valves

Gate valves shall be standard AWWA, non-rising stem, iron body bronze mounted resilient seated and tested to 350 psi. Valves shall be opened by turning counter-clockwise, be equipped with "O" Ring Seals at the top of the stem, and a 2" operating nut. The valves shall be American, Mueller, or of equal quality.

d. Valve Boxes

Valve boxes shall be installed on all valves. Boxes shall be cast iron with 5¼" shaft adjustable to appropriate height to be flush with the ground, and with the correct base for each size valve. The boxes shall be as manufactured by M&H or an equal with a cast iron drop-in lid marked "water". Valve boxes shall have an asphalt or concrete pad poured around them.

e. Concrete

Concrete shall develop a compressive strength of 3,000 psi at twenty-eight (28) days.

f. Steel Casing

The steel casing piping shall conform to ASTM designation A-53 and have an A.S.A. Standard thickness.



g. Fire Hydrants

Fire hydrants shall be the improved traffic type with one (1) 5¼" pumper and two (2) 2½" openings as manufactured by the Mueller Company or equal, with NSF threads.

h. Meter Box

Meter boxes shall be plastic boxes with a cast iron reader approximately 12" x 18" deep.

i. Curb Stops

Curb stops shall be Mueller Mark II or equal.

j. Corporation Stops

Corporation stops shall be as manufactured by the Mueller Company or equal.

k. Branch Connections

Branch connections shall be as manufactured by the Mueller Company or equal.

l. Service Line

Copper service lines shall be seamless copper tubing suitable for underground water services. This material shall be supplied in conformance with ASTM Specification B-88-62 "Type K". Polyethylene service lines shall meet the requirements of ASTM Standard D-2737 and be Drisco Pipe No. 5100 as manufactured by Phillips Petroleum, or equal. All service tubing shall be a minimum of 1".

m. Air Release Valves

Air release valves shall be installed at high points on the lines as required or as directed by the City Engineer and shall meet the City of Madison's Standard Water Specifications.

n. Blow-Off Valves

Blow-off valves shall be placed on all dead end lines or as directed by the City Engineer and shall employ an American made 1½" AWWA approved bronze gate valve, pressure rated at 125 psi, a meter box and marker.

o. Locate wire #12 solid copper shall be placed on top of pipe and taped in place. Splices will be soldered and taped. Wire will exit outside every valve box.

C.      Installation

All installation, construction, backfilling and testing shall be in strict accordance with the manufacturer's recommendations and the requirements of the City Engineer. A minimum of 36" of cover is required over pipes. Mega Lugs or equal shall be installed at all mechanical joint fittings. Thrust blocks when used will be made of concrete.

VIII.    ELECTRICAL POWER, STREET LIGHTING, TELEPHONE CABLES AND CABLE T.V.

Street lights shall be located at least one for each eight (8) lots and at each street intersection or as directed by the Public Works Director. The lights shall be 150 watt high pressure sodium with photoelectric cell for automatic operation. The poles shall be precast concrete or an approved substitute, if approved by the Public Works Director. The street lighting plan shall be approved by the Public Works Department prior to installation.

All new installations of conduit and wiring shall be underground. All pre-existing utilities located on the proposed development shall be placed underground at the expense of the developer, unless otherwise approved by the Mayor and Board of Aldermen. The electrical boxes and street lights shall be located as near as possible to the lot lines. No transformer or pedestal shall be set within five feet (5') of a fire hydrant. Underground wiring shall be located along front lot lines within the street right-of-way where possible.

IX.      UTILITY SERVICES

All services for utilities shall be made available for each lot in such a manner that it will not be necessary to disturb the street pavement, curb, gutter and drainage structures when connections are made.

X.       TRENCHING OR BORING

No trenching or boring pits shall be allowed within two feet (2') of the curb. Under no circumstances should any trench or boring pit be left open over night without written permission from the Public Works Department.

XI.      EASEMENTS

Utility and/or drainage easements of an appropriate width as required shall be provided with ten feet (10') being a minimum.

Where easements intersect or sharp changes in alignment are necessary, corners shall be cut off sufficiently to permit equipment access, subject to the approval of the City Engineer. Fences, if placed, within easements are to be placed there at the risk of the property owner. If the city makes a request, the owner must move the fence at his/her own expense.

Any overhanging limbs, shrubbery, or other vegetation forming an obstruction may be moved if necessary from within the limits of a utility easement. This shall be done at the discretion of the maintenance personnel of the City or utility which has installed or is installing facilities within such easement.

Easements which do not open at both ends upon a street, alley or another easement shall not be permitted. The City Engineer may approve a dead-end easement, but only when such easement cannot be opened at both ends.

## XII. ALLEYS

Alleys may be provided to the rear of lots only in commercial and industrial developments and only where other definite and assured provision cannot be made for service access, such as off-street loading, unloading and parking consistent with and adequate for the uses proposed. The use of alleys must be approved by the Mayor and Board of Aldermen.

If approved, the width of an alley in commercial and/or industrial developments shall be a minimum of thirty feet (30').

Alley intersections and sharp changes in alignment shall be avoided except where necessary, corners shall be cut off sufficiently to permit safe vehicular movement. Dead end alleys shall be avoided where possible, but if unavoidable, such alleys shall be provided with adequate turn around facilities at the dead ends as determined by the Planning and Zoning Board.

## XIII. FINAL GRADING OF SLOPES AND CLEAN-UP

A growing stand of grass shall be provided on all slopes within the street right-of-way such that no dirt will slough off into the streets and no finger washing will be placed on the maintenance responsibility of the City. Any sewer, waterline or culvert trench settlement occurring within a year after acceptance by the City will be corrected by the developer, at no cost to the City or homeowner. Erosion control measures shall be included in all development plans to meet Department of Environmental Quality requirements, and will be monitored by Public Works.

## XIV. SUBDIVISION ENTRANCES

Each developer will provide at the time of filing the preliminary plat (prior to construction), a complete set of plans showing the safety of the entrance and exit to the development. Construction of the identification entrance shall be of stone, brick or other treated material and the plan, therefore, must be approved by the Community Development Department. Each developer shall be required to obtain a building permit prior to construction of entrance identification into the development. All subdivision entrance features shall be outside of the right of way.

XV. LAKES OR PONDS WITHIN OR ADJACENT TO DEVELOPMENT

Any lakes or ponds included within any development shall be designed in accordance with accepted engineering practices for these type containment and outlet structures. Sufficient free board shall be provided to prevent topping of the dam. Sufficient spillway will be provided to prevent the 100-year storm from causing erosion or any other property damage downstream or loss of life or property.

Sufficient permanent bank stabilization shall be required to prevent significant erosion of waters edge.

Outlet control structures shall be designed as simply as possible and shall operate automatically. They will be designed to limit discharges into existing or planned downstream channels or conduits so as not to exceed predetermined safe capacities. Emergency overflow facilities shall be provided unless positive measures are installed to control the inflow so as not to exceed the safe capacity of the basin. The improvements shall be owned and or maintained by the Property Owner's Association of the development and each property owner shall own a proportionate share of the improvements and shall bear his proportionate responsibility for the continued maintenance in accordance with the above.

Each property owner shall, within the contents of his deed, be liable for the combined maintenance of the improvements. A special note to this effect shall appear on any final plat of subdivision or any plat of condominium and their declarations.

The Property Owner's Association shall be formed in perpetuity for the maintenance of the improvements. Membership shall be mandatory by all property owners. Articles of Incorporations and By-laws agreement of the Property Owner's Association must be approved by the Mayor and Board of Aldermen of the City of Madison before recording, and shall not be amended without approval of the city.

In subdivisions consisting of five single family residential lots or fewer, the provision of a Property Owner's Association may be waived, provided that other parts of this Section have been met.

When problems arise due to inadequate maintenance, the Public Works Director or Code Enforcement Officer may inspect the improvements and compel the correction of the problem by written notice.

The Public Works Director shall inspect all drainage facilities while under construction, and has the right to add structures where needed for the proper drainage of property/developments. When facilities are not constructed according to approved plans, the City of Madison has the explicit authority to compel compliance and have any situations corrected which are not according to the approved plans. All drainage facilities located on private property, whether dedicated to the City or not, shall be accessible at all times for inspection by the Public Works Director or City Engineer.

All lakes or ponds shall be developed to Natural Resources Conservation Service (NRCS) minimum standards and have all DEQ or COE permits where required. (See Exhibit No. 4)

## XVI. AS-BUILT PLANS

Upon completion of construction of utilities or improvements, one (1) set of reproducible tracings of complete final plans, dated, signed and certified by the Engineer in charge, one (1) digital copy in Auto Cad format and two (2) sets of prints with final certificates from the regulatory agencies, showing all features as actually installed, including materials, size, location, depth or elevation, numbers, end of lines, connections, wyes, valves, storm sewer drains, inlets and all other pertinent information shall be stamped "As-built" and filed with the Public Works Director. All underground facilities, valves, services and etc. shall be located from two (2) reference points which are approximately 90 degrees apart with distances shown on these plans. There shall be no connections made to such utilities serving the subdivision until the foregoing has been complied with.

## SECTION 11-5: DEFINITIONS

### I. DEFINITIONS

For the purpose of interpreting this ordinance, certain words used herein are defined as follows:

- A. ACI: American Concrete Institute;
- B. ADA: Americans with Disabilities Act;
- C. Alley: A minor way used primarily for vehicular service to the side or rear of properties otherwise abutting on a street;
- D. AASHTO: American Association for State Highway and Transportation Officials;
- E. ADS: Plastic pipe manufactured by Advanced Drainage Systems, Inc.;
- F. ASTM: American Society for Testing Materials;
- G. ANSI: American National Standards Institute;
- H. AS-BUILT PLANS: Construction plans signed and sealed by the Engineer showing exactly how the improvements were made;
- I. AWWA: American Water Works Association;
- J. BMP: Best Management Practices;
- K. Board: The duly elected governing body of the City (Mayor and Board of Aldermen);
- L. Building Line: A line beyond which buildings must be setback from the street or road right-of-way line on which the property fronts;
- M. CBR: California Bearing Ratio;
- N. City Engineer: Shall mean the City Engineer or his authorized agent;
- O. COE: U. S. Army Corp of Engineers;
- P. Conditional: Made or granted on the provisions set forth in this ordinance;
- Q. Cul-de-sac: A short minor street having but one (1) vehicle access to another street and terminated by a vehicular turnaround (minimum radius 36');
- R. DEQ: Department of Environmental Quality;
- S. FFE: Finished Floor Elevation;
- T. GFI: Ground Fault Interrupter;

- U. MUTCD: Manual on Uniform Traffic Control Devices;
- V. MDOT: Mississippi Department of Transportation;
- W. MSDH: Mississippi State Department of Health;
- X. NEMA: National Electrical Manufacturers Association;
- Y. NFIP: National Flood Insurance Program;
- Z. NGVD: National Geodetic Vertical Datum;
- AA. NPS: Non Point Source;
- BB. NSF: National Sanitation Foundation Testing Laboratories;
- CC. NRCS: Natural Resources Conservation Service;
- DD. Or equal: Means substantially the same in construction, application, use and performance as defined by the Public Works Director or City Engineer;
- EE. Planning Commission: The duly appointed commission of the City of Madison;
- FF. Plat: Drawing of any lot, tract or parcel of land requested to be recorded in the Office of the Chancery Clerk;
- GG. PSI: Pounds per square inch;
- HH. PSIG: Pounds per square inch gauge;
- II. PVC: Polyvinyl Chloride;
- JJ. Public Works Director: Shall mean the Public Works Director or his authorized agent;
- KK. Re-subdivision: The redividing of any part or all of any block or blocks of a previously platted subdivision, addition, lot or tract;
- LL. SCADA: Supervisory Control and Data Acquisition;
- MM. SDR: Standard Dimension Ratio;
- NN. Shall: To be interpreted in its mandatory sense;
- OO. Street, Principal Arterial (Category I): A street or roadway which is used principally for fast or heavy traffic movement and forms a part of the primary street and highway system serving Madison, and which has a projected average daily traffic count in excess of 5,000;
- PP. Street, Minor Arterial (Category II): A street which carries traffic from collector and local streets and has a projected average daily traffic count of 1,500 – 5,000;

- QQ. Street, Collector or Business (Category III): A street including the principal entrance to a residential development which carries traffic from residential areas to arterial streets and has a projected average daily traffic count of 800 - 1,500;
- RR. Street, Local (Category IV): A street which is used primarily for access to the abutting properties, and which has a projected average daily traffic count of less than 800;
- SS. Sub divider: Any person or persons, firms, partnership, corporation or other organization, acting as an entity, subdividing or proposing to subdivide land as herein defined by the Regulations;
- TT. Subdivision: The division of any lot, tract or parcel of land into two (2) or more lots for the immediate or future purpose of sale or building development;
- UU. SWPPP: Storm Water Pollution Prevention Plan;
- VV. TDH: Total Dynamic Head.



## **SECTION 11-6: FEES AND CHARGES**

1. All fees are due prior to final plat approval.
2. Filing Fees and Development Review and Inspection Fees shall be set by the Mayor and Board of Aldermen.
3. A filing fee shall be paid to the City Clerk at the time of filing any preliminary subdivision plat.
4. A Development Review and Inspection Fee shall apply to all developments served by the City of Madison: residential, commercial or industrial.
5. In multi-family developments, each unit will equal one (1) lot.
6. Hoy Road sewer charge shall be \$331.00 per lot for each lot connecting onto the Hoy Road sewer system.
7. A charge of \$400.00 per acre, will be charged, for all developments west of I-55 that flows into the East Madison Regional Sewer System.

## SECTION 11-7: MISCELLANEOUS

1. Fees and Charges - Fees and charges to subdividers in the City of Madison shall be as prescribed in this and other applicable resolutions and ordinances of the City of Madison, which are incorporated into this Ordinance by reference.
2. Penalties for Violation - Any person found guilty of a violation of any of the terms and provisions of this Ordinance shall be subject to a fine not to exceed \$500.00 or imprisoned for no more than ninety (90) days or both a fine and imprisonment. A continuance of a violation shall constitute a new and separate offense each day.
3. Validity - If any term or provision of this Ordinance shall be held to be unconstitutional or otherwise unenforceable, the remainder thereof shall not be affected thereby and shall remain in full force and effect.
4. Conflict - All ordinances heretofore adopted on the subject of this Ordinance which are in conflict herewith are hereby repealed and the applicable provisions of the Ordinance are substituted in their place.
5. Variances - The Mayor and Board of Aldermen shall have the power to authorize variances from the provisions or requirements of this Ordinance as will not be contrary to the public interest. No variance from the strict application of any provision shall be granted unless it is found that:
  - A. Literal interpretation of the provisions of this Ordinance would deprive the owner of reasonable use of their land; and
  - B. Granting the variance would be in harmony with the general purpose and intent of this Ordinance and will not be injurious to the neighborhood or otherwise detrimental to the public welfare.
6. One Year Warranty - Prior to the final acceptance by the City of Madison of the dedicated utilities, streets and other facilities, a one-year warranty shall be submitted in writing by the developer for all the work performed.
7. Asphalt Surface Course - A minimum of 1½" of SC-I, Type II asphalt shall remain off until the end of the warranty or until directed by the Public Works Director. Subgrade failure, poor drainage or curbs needing to be repaired will be repaired/replaced prior to surface course being installed.

**SECTION 11-8: EFFECTIVE DATE**

This Ordinance shall become effective as provided by law.

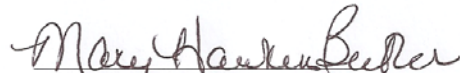
SO ORDAINED AND ADOPTED, THIS 18<sup>th</sup> day of July, 2006.

\* \* \* \* \*

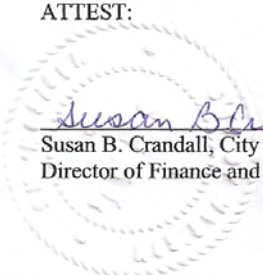
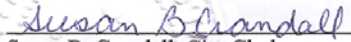
The above and foregoing Ordinance having previously been reduced to writing, a motion was made, by Alderman Prather and seconded by Alderman Hickok to approve and adopt the Ordinance and no request having been made by any member of the Mayor and Board of Alderman that said Ordinance be read by the City Clerk before a vote was taken. Said Ordinance was adopted by the Board of Aldermen with the results being as follows:

Alderman Tatum voted	<u>Aye</u>
Alderman Peeler voted	<u>Absent</u>
Alderman Prather voted	<u>Aye</u>
Alderman Hickok voted	<u>Aye</u>
Alderman Hudgins voted	<u>Aye</u>
Alderman Howland voted	<u>Aye</u>
Alderman Clingan-Smith voted	<u>Absent</u>

The motion having received the affirmative vote of all members of the Board of Aldermen present, the Mayor declared the motion so carried and this Ordinance ordained and adopted on this the 18<sup>th</sup> day of July, 2006.

  
Mary Hawkins Butler, Mayor

ATTEST:

  
  
Susan B. Crandall, City Clerk  
Director of Finance and Administration

**AN ORDINANCE ADOPTING THE RECODIFICATION OF THE SUBDIVISION  
REGULATIONS OF THE CITY OF MADISON, MISSISSIPPI**

BE IT ORDAINED BY THE MAYOR AND BOARD OF ALDERMEN OF THE CITY OF  
MADISON:

**SEC. ONE. TEXT.**

The Subdivision Regulations of the City of Madison, Mississippi, as set forth in the document on file in the office of the City Clerk and incorporated herein by reference, are hereby confirmed, ratified and adopted in furtherance of the purposes set forth therein.

**SEC. TWO. SEVERABILITY AND REPEALER.**

If any provision of this Act, the amendments made by this Ordinance, or the application of such provision or amendment to any person or circumstance is held to be unconstitutional, the remainder of this Ordinance and the application of the provisions of such to any person or circumstance shall not be affected thereby. Any ordinance in conflict with this enactment is hereby repealed to the extent of the conflict.

**SEC. THREE. EFFECTIVE DATE.**

This Ordinance shall be effective thirty days from and after passage.

\* \* \* \* \*

The above and foregoing Ordinance having previously been reduced to writing, a motion was made by Alderman Hickok and a second by Alderman Howland to approve and adopt the Ordinance and no request having been made by the Mayor or any member of the Board of Aldermen that said Ordinance be read by the City Clerk before a vote was taken. Said Ordinance was adopted by the Board of Aldermen with results being as follows:

Alderman Clingan-Smith voted:	<u>Yea</u>
Alderman Tatum voted:	<u>Yea</u>
Alderman Peeler voted:	<u>Yea</u>
Alderman Prather voted:	<u>Yea</u>
Alderman Hickok voted:	<u>Yea</u>
Alderman Hudgins voted:	<u>Yea</u>
Alderman Howland voted:	<u>Yea</u>

The motion having received the affirmative vote of all members of the Board of Aldermen present, the Mayor declared the motion so carried and this Ordinance adopted on this 5th day of February, 2008.

CITY OF MADISON, MISSISSIPPI

BY: Mary Hawkins Butler  
Mary Hawkins Butler, Mayor

ATTEST:

Susan B. Crandall  
Susan Crandall  
City Clerk

**CERTIFICATE**

I, Susan B. Crandall, the duly appointed, qualified and acting City Clerk of the City of Madison, do hereby certify that the above and foregoing is a true and correct copy of an Ordinance, passed, ordained and adopted by the Mayor and Board of Alderman of said City at a public meeting thereof held on the 18<sup>th</sup> day of July, 2006, and which Ordinance is spread of record in the minutes of said meeting and maintained in my office.

GIVEN under my hand and official seal of office, this the 24<sup>th</sup> day of July, 2006.

*Susan B. Crandall*  
Susan B. Crandall, City Clerk  
Director of Finance and Administration

(SEAL)

**Table 4-11 CONSTRUCTION BMPs**

(Reference: Planning and Design Manual for the Control of Erosion, Sediment and Stormwater. Mississippi Department of Environmental Quality. 1993)

PRACTICE NAME	PRACTICE DESCRIPTION	PRACTICE HIGHLIGHTS
Buffer Zone	A natural, undisturbed strip of “green-belt” on the perimeter of a land disturbing activity to reduce flow velocities and trap sediment.	<u>Applicability</u> : On the perimeter of any land disturbing activity. <u>Advantages</u> : Provides aesthetic as well as water quality benefits, wildlife habitat, shade, noise abatement and wind-break. Low cost when using existing vegetation. <u>Disadvantages</u> : May not be cost effective to use if the cost of land is high.
Check Dam	A temporary practice constructed of stone to reduce channel erosion until permanent stabilization measures can be installed.	<u>Applicability</u> : In the bottom of small channels or drainage-ways that will be filled or permanently stabilized at a later date. <u>Advantages</u> : Low cost and easy installation. Allow sediment to settle. May be used permanently if designed properly. <u>Disadvantages</u> : If improperly planned or installed can lead to accelerated bank erosion.
Construction Entrance/Exit	A gravelled area where vehicles enter and leave a construction site to provide a buffer for the deposition of mud and sediment.	<u>Applicability</u> : At all construction entrances/exits especially those that directly access onto public roads or other off-site paved areas. <u>Advantages</u> : Reduces off-site clean-up costs.
Construction Road Stabilization	The proper location and stabilization of construction roads to reduce on-site erosion during construction.	<u>Applicability</u> : All new construction roads. <u>Advantages</u> : Prevents erosion and sediment problems from occurring.
Construction Sequence	The coordination of the timing of land-disturbing activities and the installation of control measures to control erosion.	<u>Applicability</u> : During any land-disturbing activity. <u>Advantages</u> : Helps prevent erosion and sediment problems from occurring.
Diversion	A channel with a supporting earth ridge to control runoff from damaging down slope areas.	<u>Applicability</u> : Wherever the direction and velocity of runoff from up slope areas needs to be controlled. <u>Advantages</u> : Low cost of installation and high effectiveness. <u>Disadvantages</u> : Concentrates runoff necessitating a stable outlet.

**TABLE 4-11**  
(Continued)

PRACTICE NAME	PRACTICE DESCRIPTION	PRACTICE HIGHLIGHTS
Dust Control	The reduction and control of dust generated due to land disturbing activities.	<u>Applicability:</u> Any land disturbing activity during dry weather periods until areas are permanently stabilized.
Grade Stabilization Structure	A structure installed to control the grade in natural or constructed channels to prevent erosion.	<u>Applicability:</u> To control head cutting or gully erosion, to control velocities at channel intersections with different elevations. <u>Advantages:</u> An effective means of grade control. <u>Disadvantages:</u> High cost of larger structures.
Grassed Waterway	A grassed channel designed to carry flow at non-erosive velocities.	<u>Applicability:</u> Wherever the natural drainage system will not carry concentrated flows with erosion. <u>Advantages:</u> Cost efficient means of stabilizing waterways. Provides moderate removal of sediments. May provide wildlife habitat. Replacement for curb and gutter systems. <u>Disadvantages:</u> Grassed waterway vegetation may be a “weed” outside the channel proper, requires continuous management. Cannot control runoff from very large storms.
Land Grading	Reshaping the land surface by grading.	<u>Applicability:</u> To prepare building sites, establish drainage areas, direct drainage patterns and control runoff velocities. <u>Disadvantages:</u> The primary cause of erosion and sedimentation from a site.
Level Spreader	A non-erosive outlet for concentrated runoff by dispersing flow uniformly across a stable slope.	<u>Applicability:</u> Where concentrated flows from 5 acres or less can be dispersed over a vegetated area. <u>Advantages:</u> Relatively low cost structure. Reduce storm water flow velocity, encourage sedimentation and infiltration. <u>Disadvantages:</u> Site constraints limit applicability. Can easily develop “short circuiting” (concentrated rather than sheet flow).

**TABLE 4-11**  
(Continued)

PRACTICE NAME	PRACTICE DESCRIPTION	PRACTICE HIGHLIGHTS
Lined Waterway or Outlet	A paved or riprapped channel designed to carry concentrated flow where a vegetated channel would not be sufficient.	<u>Applicability:</u> Where flow velocities exceed allowable limits for grassed waterways. <u>Advantages:</u> Provides a stable, low maintenance channel. <u>Disadvantages:</u> Relatively high installation cost.
Mulching	A surface mulch applied to disturbed area to control erosion before establishment of vegetation.	<u>Applicability:</u> Where a disturbed surface needs to be protected until permanent cover can be established. <u>Advantages:</u> Provides immediate protection to soils that are exposed. Retains moisture. <u>Disadvantages:</u> May delay germination of some seeds due to reduced soil surface temperatures.
Paved Flume	Small concrete-lined channels designed to convey storm runoff down steep slopes.	<u>Applicability:</u> Where runoff down steep slopes cannot be handled by a vegetated surface. <u>Advantages:</u> Effective, easily installed, low maintenance, low cost.
Rock Outlet Protection	A rip-rap lined apron at a structure outlet to provide energy dissipation to prevent downstream erosion.	<u>Applicability:</u> Where outlet velocities would be erosive if no protection were provided. <u>Advantages:</u> Relatively low cost, easy installation, low maintenance and effective. <u>Disadvantages:</u> May be unsightly in some applications.
Sand Fence	A low fence of wooden slats erected perpendicular to the prevailing wind to trap sand and rebuild dunes.	<u>Applicability:</u> To build dunes where needed or to protect off-site areas from blowing sand. <u>Advantages:</u> Low cost, easy installation.
Sediment Basin	A temporary sediment storage pool usually constructed by building a low earthen dam across a drainage way.	<u>Applicability:</u> Where sediment from disturbed areas can be retained on-site. <u>Advantages:</u> Protects downstream areas from damage due to sediment. <u>Disadvantages:</u> Regular cleaning and maintenance required. Ponds are attractive to children. More expensive than other methods to remove sediment.



**TABLE 4-11**  
(Continued)

PRACTICE NAME	PRACTICE DESCRIPTION	PRACTICE HIGHLIGHTS
Silt Fence	A permeable barrier erected on small disturbed areas to capture sediment from sheet flow.	<p><u>Applicability:</u> To capture sediment from small disturbed areas or to divert small volumes of flow to protected outlets.</p> <p><u>Advantages:</u> Inexpensive, minimal clearing and grubbing needed for installation, reduced runoff velocity, removes sediment preventing downstream damage.</p> <p><u>Disadvantages:</u> Only appropriate for small drainage areas with overland flow. Frequent inspection and maintenance necessary.</p>
Slope Drain	Temporary flexible tubing used to convey concentrated runoff down the face of a disturbed slope.	<p><u>Applicability:</u> To prevent gully formation on disturbed slopes during early stage of project development.</p> <p><u>Advantages:</u> Easy installation and low maintenance.</p> <p><u>Disadvantages:</u> May clog during a large storm.</p>
Sodding	Establishment of vegetation by sod when other methods are not applicable.	<p><u>Applicability:</u> When vegetative establishment by other means is unacceptable.</p> <p><u>Advantages:</u> Provides immediate vegetative cover and erosion control.</p> <p><u>Disadvantages:</u> High installation costs and early maintenance demands.</p>
Storm Drain Inlet Protection	Sediment trapping measures around drop inlet or curb inlet structures.	<p><u>Applicability:</u> To protect storm drains from sediment prior to permanent stabilization of disturbed areas.</p> <p><u>Advantages:</u> Prevents clogging of existing storm drainage system and the siltation of receiving waters.</p> <p><u>Disadvantages:</u> Removal of collected sediment, limited to drainable areas not exceeding one acre.</p>
Straw Bale Barrier	A permeable barrier of straw bales erected on small disturbed areas to capture sediment from sheet flow.	<p><u>Applicability:</u> To capture sediment from small disturbed areas or to divert small volumes of flow to protected outlets.</p> <p><u>Advantages:</u> Can prevent downstream damage from sediment if properly installed, used and maintained. Cost.</p> <p><u>Disadvantages:</u> Short life span, high inspection and maintenance requirement. Subject to misuse.</p>

**TABLE 4-11**  
(Continued)

PRACTICE NAME	PRACTICE DESCRIPTION	PRACTICE HIGHLIGHTS
Stream Crossing	Bridges, culverts and fords used to minimize water quality impacts due to traffic crossing streams.	<u>Applicability:</u> Any stream crossing. <u>Advantages:</u> Minimize direct sources of water pollution. <u>Disadvantages:</u> Costly to construct, can cause flooding and safety hazards.
Surface Roughening	Roughening a slope bare soil surface with horizontal depressions to help control erosion by aiding vegetation establishment.	<u>Applicability:</u> All disturbed slopes. <u>Advantages:</u> Minimal costs, improves vegetation establishment. Provides some instant protection for bare soil while vegetation is established. <u>Disadvantages:</u> Special roughening equipment may be needed in some cases. Ineffective in anything more than a gentle rain.
Temporary Seeding	Establishment of temporary vegetative cover to stabilize areas that will not be permanently graded for several weeks or months.	<u>Applicability:</u> Denuded areas that will not be permanently stabilized immediately. <u>Advantages:</u> Provides dust control, residue for soil protection, nurse crop for permanent vegetation. <u>Disadvantages:</u> May require annual reseeded until project is complete.
Top Soiling	The removal and stockpiling of topsoil from areas to be graded for later replacement and establishment of permanent vegetation.	<u>Applicability:</u> Wherever grading is to be done and areas of new vegetation will have to be established. <u>Advantages:</u> Provides topsoil for planting ornamental or high quality turf. <u>Disadvantages:</u> handling costs may be too high to make this practice cost-effective.
Tree Preservation and Protection	Marking trees to be preserved so no construction activity will take place within the drip line.	<u>Applicability:</u> For any trees to be protected from construction activities. <u>Advantages:</u> Reserves a resource that would be expensive to replace. Immediate aesthetics. <u>Disadvantages:</u> Required planning, minimal inconvenience during construction.
Trees, Shrubs, Vines and Ground Cover	The planting of trees, shrubs, vines and ground covers to provide low-maintenance, long-term erosion protection.	<u>Applicability:</u> Steep or rocky slopes, shaded areas, habitat improvement, windbreaks or screens. <u>Advantages:</u> Aesthetic, low-maintenance, erosion protection. <u>Disadvantages:</u> Vegetation selection critical.

**TABLE 4-11**  
(Continued)

PRACTICE NAME	PRACTICE DESCRIPTION	PRACTICE HIGHLIGHTS
Vegetative Dune Stabilization	Planting of adapted native vegetation to stabilize coastal dunes and sandy areas disturbed by construction or to rebuild frontal dunes.	<u>Applicability</u> : Any coastal dune or sandy area requiring vegetation. <u>Advantages</u> : Stabilizes dunes and sandy areas.
Water Bars	A ridge or ridge and channel constructed diagonally across a sloping right-of-way to control runoff and prevent erosion.	<u>Applicability</u> : All sloping right-of-way <u>Advantages</u> : Low cost, ease of installation. <u>Disadvantages</u> : Requires stable outlet.

## **URBAN RUNOFF BEST MANAGEMENT PRACTICES**

Stormwater runoff from roofs, lawns, parking lots, streets, industrial sites, and other pervious and impervious areas washes a number of important constituents into groundwater, lakes and streams. A large volume of the constituents in urban runoff is comprised of sediment and debris from decaying pavements and buildings that can clog sewers and waterways, reducing hydraulic capacity and thus increasing the chance of flooding and degrading aquatic habitat. Heavy metals and inorganic chemicals (including copper, lead, zinc, and cyanide) arising from transportation activities, building materials, and other sources are also significant pollutants. Nutrients are added to urban runoff from fertilizers applied around homes, parks, industrial areas, commercial landscaping and public areas. Over half of all pesticides used in the United States are in urban settings: home, commercial, and industrial. Urban runoff is a major course in Non Point Source (NPS) pollution in the nation's streams, lakes, rivers and groundwater.

Both structural and nonstructural practices are available to control and in some cases treat, urban NPS runoff. These methods retain water and/or solids within basins and/or runoff conveyance systems, or allow water to percolate into the ground, in a manner that does not threaten groundwater, to reduce the peak flows and pollutants which reach waterbodies.

Additional alternatives are being tested to perform similar functions. These include the utilization of existing wetlands or the creation of artificial wetlands to provide settling of solids, nutrient removal through plant utilization, and chemical breakdown through biological activity. "First flush diversion systems" are used to route the first runoff, which is the most contaminated, to a treatment type BMP such as a constructed wetland.

The Mississippi Department of Environmental Quality, Office of Pollution Control, is designated as the lead management agency for urban runoff control. In Mississippi, the City of Jackson is the only urban area required to have an Urban Stormwater Permit issued by the Stormwater/NPDES permit section. The Water Quality Management Section has identified the following needs that should be met for efficient urban NPS monitoring and evaluation methods:

1. Documentation of design specifications for urban NPS BMPs;
2. Increase monitoring efforts to better evaluate the magnitude of the problem of urban runoff;
3. Investigate the need for a statewide urban stormwater program according to EPA guidelines for larger municipalities and industries.

These needs are further addressed in the four year plan and milestones section.

**TABLE 4-12 URBAN RUNOFF BMPs**

(Reference: Planning and Design Manual for the Control of Erosion, Sediment and Stormwater. Mississippi Department of Environmental Quality. 1993)

**A) Structural Practices**

PRACTICE NAME	PRACTICE DESCRIPTION	PRACTICE HIGHLIGHTS
Concrete Grid and Modular Pavement	The use of special pervious paving materials in low traffic areas to increase infiltrate thereby reducing runoff.	<u>Applicability:</u> Low traffic areas built on a soil with medium to high permeability. <u>Advantages:</u> Reduces runoff, heat load, provides aesthetics, provide some treatment to water. <u>Disadvantages:</u> Relatively high cost compared to impervious paving materials, require proper maintenance.
Constructed Wetland	A modified natural or constructed shallow basin for the treatment of contaminated waters by wetland vegetation.	<u>Applicability:</u> Where runoff is contaminated by oils, pesticides, nutrients or wastes. <u>Advantages:</u> "Natural" treatment and setting. <u>Disadvantages:</u> Cost of construction, site requirements.
Exfiltration Trench	Excavated pits or trenches which are back-filled with sand and/or graded aggregates to dispose of stormwater.	<u>Applicability:</u> Wherever stormwater needs to be disposed of through subsurface infiltration. <u>Advantages:</u> Provides efficient means of disposal and detention. <u>Disadvantages:</u> Requires permeable soils, higher costs than surface disposal, potential for polluting groundwater.
Parking Lot Storage	Using parking areas or landscape islands as temporary runoff impoundments.	<u>Applicability:</u> Whenever runoff impervious areas may increase downstream flooding, channel degradation or pollutant loading. <u>Advantages:</u> Easily incorporated into landscape planning and design, low cost. <u>Disadvantages:</u> Temporarily causes inconvenience due to standing water, can cause damage to paved surfaces.
Retention Basins	An infiltration reservoir to provide complete on-site storage and treatment of a specific volume of stormwater runoff.	<u>Applicability:</u> Treatment of first flush stormwater. <u>Advantages:</u> Provides efficient treatment in an aesthetic manner. <u>Disadvantages:</u> Requires permeable soils and sufficient area for storage and infiltration.
Roof Drainage and Discharge	The collection and disposal of roof runoff in a manner which will maximize on-site infiltration and utilization.	<u>Applicability:</u> All roof runoff. <u>Advantages:</u> Provides water source for landscaping needs, reduces damage due to runoff flows. <u>Disadvantages:</u> Requires soils with adequate intake rates, may require temporary storage.

**TABLE 4-12**  
(Continued)

PRACTICE NAME	PRACTICE DESCRIPTION	PRACTICE HIGHLIGHTS
Subsurface Drain	Perforated, flexible conduit installed in a trench to remove excess water from soil.	<p><u>Applicability:</u> Where surface drainage is not sufficient to remove excess water.</p> <p><u>Advantages:</u> Low maintenance, improve soil-water conditions for vegetative growth.</p> <p><u>Disadvantages:</u> Requires adequate outlet, high cost of installation.</p>
Underdrains and Stormwater Filter Systems	A conduit which intercepts, collects and conveys drainage following infiltration and percolation through soil, aggregate, and/or filter fabric where natural infiltration would not be possible.	<p><u>Applicability:</u> Where treatment of runoff through natural conditions is restricted.</p> <p><u>Advantages:</u> Provides treatment in an area that would normally not be used.</p> <p><u>Disadvantages:</u> Relatively high cost per treatment volume. Outlet required.</p>

**B) Non-structural**

These include best management practices such as Zoning Codes, Public Awareness and Street Cleaning.

## **HYDROLOGIC MODIFICATIONS BEST MANAGEMENT PRACTICES**

Hydrologic modification is defined as channelization, dredging, dam construction, flow regulation/modification, bridge construction, removal of riparian vegetation, and stream modification. Information is not available on the extent of hydrologic modification impacts on the state's water resources, especially on lakes and estuarine waters. In Mississippi, the hydrologic modifications which cause most concern are due to channelization, impoundments, urbanization and dredging.

The major problems resulting from this category are turbidity and suspended solids or sediments. Also, pollutants other than sediment may be resuspended by activities which disturb the stream bed. Heavy metals introduced into the river system by industrial discharge and other sources may be present in sediment accumulation and may be resuspended by channel disturbance.

By its very nature, hydrologic modification is closely tied to wetland issues. The COE is the agency most involved in issuing permits for land disturbing activities in wetlands. The COE administers a national regulatory program (Section 404 of the Clean Water Act) aimed at controlling the discharge of dredged or fill material into waters of the United States. Waters of the United States refers to navigable waters, their tributaries and adjacent wetlands. Activities covered under Section 404 must involve the discharge of dredge and fill material and may include piers, dams, dikes, marinas, bulkheads, utility and power transmission lines and bank stabilization.

Best management practices are required for COE Civil Works Projects as well as issued permits. The BMPs are designed primarily to minimize the impacts from the discharge of dredged or fill materials into the waters of the United States. A list of BMPs is provided in Table 4-13.

#### **TABLE 4-13 HYDROLOGIC MODIFICATIONS BEST MANAGEMENT PRACTICES**

The Best Management Practices in the category include all the BMPs in the construction NPS category plus the following:

1. Operational procedures for dredging;
2. Revetments-Riprap: A layer of loose rock or aggregate placed over an erodible soil surface such as storm drain outlets, channel banks and/or bottoms, bridge abutment roadside ditches and drain structures;
3. Water Quality Analysis – The COE Waterways Experiment Station recommends several water quality analysis of dredging sites and disposal areas;
4. Avoidance – avoid activities causing hydrologic modifications whenever possible;
5. Single sided operations – wherever possible, construction and maintenance operations should be conducted from one side of the channel to minimize vegetation disturbance on the opposing side. The operational side may be alternated from topbank to topbank as necessary or desired.

#### **Structural**

1. Limit clearing or cleaning and grubbing prior to actual need;
2. Install terraces or diversions, including stable outlets
  - A. Above and below borrow areas
  - B. Above emergency spillways
  - C. Above storage areas;
3. Control access and haul roads
  - A. Contour roads
  - B. Dust Control
  - C. Erosion control – turnouts, pipe culverts
  - D. Vegetate disturbed areas;
4. Shape and control borrow areas. Reduce area and duration of exposed area;
5. Install debris basin;
6. Locate, shape, size and protect by-pass channel
  - A. Use coffer dam
  - B. Pump excess water across construction site;
7. Provide sectional construction;
8. Provide timely installation of mechanical structures;
9. Control work sequence;
10. Complete as you go;



11. Winter or seasonal shutdowns to insure pollution control;
12. Seeding – temporary and permanent;
13. Prevents fires;
14. Prevent pollution by chemicals and oil;
15. Mulch unprotected areas.

### **Channels**

1. Leave blocks;
2. Provide construction in new cut – leaving old channel to carry flow;
3. Do not open new channel to flow until vegetated;
4. Seed sloped immediately after construction;
5. Mulch slopes;
6. Spray mulch, seed, fertilizer and asphalt or polyvinyl resin, etc.;
7. Excavate downstream;
8. Provide temporary grade control structures;
9. Limit clearing, snagging;
10. Limit disturbing channel banks to one side. Delay and complete other side after first side is vegetated. If work can be completed from one side, disturb one side only;
11. Construction on channels should be performed in segments, completing each segment before moving to the next segment.
12. Control water inlets into channel;
13. Install pipe inlets, grade control structures, etc., at the time of construction;
14. Install sediment traps in channel and provide for their cleanup and maintenance.

**SUBDIVISION DEVELOPMENT PERMIT****CITY OF MADISON, MISSISSIPPI**

**SUBDIVISION NAME:** \_\_\_\_\_ **APPLICATION DATE:** \_\_\_\_\_  
**DEVELOPER NAME:** \_\_\_\_\_ **CONTACT:** \_\_\_\_\_  
**ADDRESS:** \_\_\_\_\_ **CITY:** \_\_\_\_\_ **STATE:** \_\_\_\_\_ **ZIP:** \_\_\_\_\_  
**TELEPHONE:** \_\_\_\_\_ **FAX:** \_\_\_\_\_ **E-MAIL:** \_\_\_\_\_ **CELL:** \_\_\_\_\_  
**DEVELOPER'S ENGINEER:** \_\_\_\_\_ **CONTACT:** \_\_\_\_\_  
**ADDRESS:** \_\_\_\_\_ **CITY:** \_\_\_\_\_ **STATE:** \_\_\_\_\_ **ZIP:** \_\_\_\_\_  
**TELEPHONE:** \_\_\_\_\_ **FAX:** \_\_\_\_\_ **E-MAIL:** \_\_\_\_\_ **CELL:** \_\_\_\_\_  
**PROPERTY DESCRIPTION:** \_\_\_\_\_ Acres located in the \_\_\_\_\_ 1/4 of the \_\_\_\_\_ 1/4 of Section \_\_\_\_\_, T \_\_\_\_\_, R \_\_\_\_\_

**CONSTRUCTION APPROVAL - REQUIRED PRIOR TO CONSTRUCTION:**

1. Preliminary Plat Approval \_\_\_\_\_, 20
2. Land Disturbance Plan Approval \_\_\_\_\_, 20
3. Construction Plans Approval:
  - (A) By City Engineer \_\_\_\_\_, 20
  - (B) By Bureau of Pollution Control \_\_\_\_\_, 20
  - (C) By Miss. State Dept. Of Health \_\_\_\_\_, 20
  - (D) By City Attorney \_\_\_\_\_, 20

**THIS PERMIT APPLICATION SUBMITTED HERewith BY:**

\_\_\_\_\_  
 \_\_\_\_\_ DATE:  
**DEVELOPER OR DEVELOPER'S AGENT**

**APPROVAL FOR CONSTRUCTION GRANTED BY:**

\_\_\_\_\_  
 \_\_\_\_\_ DATE: \_\_\_\_\_  
**PUBLIC WORKS DIRECTOR** **OPERATIONS MANAGER**

**NOTE:** No work shall commence on the above referenced subdivision prior to receiving the approval of the City of Madison's Engineer or Public Works Director. Failure to adhere to this requirement will constitute a violation of the City of Madison's Subdivision Regulations.

**FINAL PLAT APPROVAL:**

1. Final Inspection & Punch List \_\_\_\_\_, 20  
(Inspector's initials)
2. Reinspection \_\_\_\_\_, 20  
(Inspector's initials)
3. Final Certification -  
 Letter to City from Developer's Engineer \_\_\_\_\_, 20
4. Final Approval Letter -  
 From Bureau of Pollution Control \_\_\_\_\_, 20
5. Final Approval Letter -  
 From Miss. State Dept. Of Health \_\_\_\_\_, 20
6. Bond Amount submitted for Final Paving \_\_\_\_\_, 20 \$ \_\_\_\_\_
7. Dev. Review Fees: No. Of Lots \_\_\_\_\_ X \$ \_\_\_\_\_ = \$ \_\_\_\_\_, 20
8. Special Assessments: \_\_\_\_\_ X \$ \_\_\_\_\_ = \$ \_\_\_\_\_, 20
9. As-built plans received: \_\_\_\_\_, 20
10. Street signs received: \_\_\_\_\_, 20
11. Two (2) good water samples received \_\_\_\_\_, 20
12. Water meter boxes received # \_\_\_\_\_, 20
13. Board approval of final plat \_\_\_\_\_, 20

**RECOMMENDED FOR APPROVAL**

\_\_\_\_\_  
 \_\_\_\_\_ DATE: \_\_\_\_\_  
**PUBLIC WORKS DIRECTOR**

\_\_\_\_\_  
 \_\_\_\_\_ DATE: \_\_\_\_\_  
**OPERATIONS MANAGER**

**APPENDIX “A”**

**REQUIRED CERTIFICATES ON FINAL PLAT**

- A-1 SURVEYOR’S CERTIFICATE**
- A-2 OWNER’S CERTIFICATE**
- A-3 CERTIFICATE OF ACKNOWLEDGEMENTS**
- A-4 CITY APPROVAL AND ACCEPTANCE**
- A-5 CITY ENGINEER’S APPROVAL**
- A-6 CERTIFICATE OF COMPARISON**
- A-7 CERTIFICATE OF FILING AND RECORDATION**
- A-8 PROFESSIONAL ENGINEER’S CERTIFICATE**
- A-9 OWNER’S ACKNOWLEDGEMENT**

(1)

**REGISTERED LAND SURVEYOR'S CERTIFICATES**

**STATE OF MISSISSIPPI**

**COUNTY OF MADISON**

**I, \_\_\_\_\_, Registered Land Surveyor, do hereby certify**

**that at the request of \_\_\_\_\_, the Owner(s), I have subdivided and platted**

**the following described land being situated in the \_\_\_\_\_ of Section \_\_\_\_\_,**

**Township \_\_\_\_\_, Range \_\_\_\_\_, City of Madison, Madison County,**

**Mississippi, as follows, to-wit:**

**(Legal Description of Survey)**

**The above described parcel of property is located in \_\_\_\_\_,**

**of Section \_\_\_\_\_, Township \_\_\_\_\_, Range \_\_\_\_\_ Madison County,**

**Mississippi, and contains \_\_\_\_\_ acres, more or less.**

**WITNESS my signature, this the \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_.**

\_\_\_\_\_  
**(Signature)**

\_\_\_\_\_  
**Mississippi Registration Number**

\_\_\_\_\_  
**Registered Land Surveyor**

**(SEAL)**

**~ Ex. 3 ~**

**~ A - 1~**

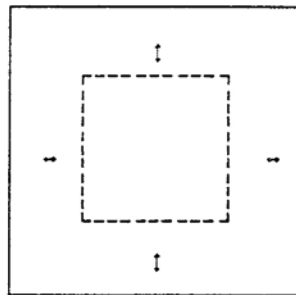
- (2) This survey meets the minimum standards for Class “B” Surveys adopted by the Mississippi State Board of Registration for Professional Engineers and Land Surveyors.

Reference Meridian – true North based on \_\_\_\_\_

- Indicates ferrous metal rod along property lines or at property corners.

(3) Typical Setback Schedule

Front.....  
Side.....  
Rear.....  
Corner (side street).....



STREET



Setback lines shall be dashed-in on all lots on the final plat.

**OWNER'S CERTIFICATE**

**OWNER'S CERTIFICATE**

**STATE OF MISSISSIPPI**

**COUNTY OF MADISON**

I, (WE) \_\_\_\_\_ do hereby certify that  
(OWNERS)

I (we) are the owners of the land described in the foregoing certificate of \_\_\_\_\_,  
Registered Land Surveyor, and I (we) have caused the same to be subdivided and platted  
as shown hereon, and have designated the same as \_\_\_\_\_ that I (we)  
(Name of Subdivision)

hereby adopt this plat of subdivision as its free act and deed and dedicate all  
streets, utilities, utility easements and rights-of-way to the City of Madison for public use  
forever.

WITNESS MY SIGNATURE, this the \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_.

\_\_\_\_\_  
Owner(s)

**CERTIFICATE OF ACKNOWLEDGEMENTS**

**SURVEYOR'S ACKNOWLEDGMENT    STATE OF MISSISSIPPI                      COUNTY OF MADISON**

**PERSONALLY** came and appeared before me, the undersigned authority in and for the jurisdiction aforesaid, the within named, \_\_\_\_\_  
**Registered Land Surveyor, who acknowledged to me that he signed and delivered this plat and certificate thereon as his act and deed on the date and in the year therein mentioned.**

**GIVEN UNDER MY HAND AND SEAL OF OFFICE on this the \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_.**

\_\_\_\_\_  
**Notary Public**

**My Commission Expires:**

\_\_\_\_\_

~ **Ex. 3** ~

~ **A - 3** ~

**CITY APPROVAL AND ACCEPTANCE**

**CITY APPROVAL AND ACCEPTANCE      STATE OF MISSISSIPPI      COUNTY OF MADISON**

**This subdivision is hereby approved and accepted and all improvements contained therein to be dedicated to the City of Madison on this the \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_.**

\_\_\_\_\_  
**Mayor**

\_\_\_\_\_  
**City Clerk**

**~ Ex. 3 ~**

**~ A - 4 ~**



**CITY ENGINEER'S APPROVAL**

**CITY ENGINEER'S APPROVAL**

**STATE OF MISSISSIPPI**

**COUNTY OF MADISON**

**I have examined this plat and find that it conforms to all conditions set forth on the preliminary plat as approved by the Mayor and Board of Alderman and thus recommend final approval.**

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**City Engineer**

**~ Ex. 3 ~**

**~ A - 5 ~**

**CERTIFICATE OF COMPARISON**

**STATE OF MISSISSIPPI**

**COUNTY OF  
MADISON**

We, \_\_\_\_\_, Chancery Clerk, and \_\_\_\_\_,

**Registered Land Surveyor, do hereby certify that we have carefully compared this plat of**

\_\_\_\_\_ with the original thereof, as made by the said \_\_\_\_\_,  
(Name of Subdivision)

**Land Surveyor, and find it to be a true and correct copy of said map or plat.**

Given under my hand and seal of office, this the \_\_\_\_\_ day of \_\_\_\_\_,  
20\_\_\_\_\_.

\_\_\_\_\_  
**Registered Land Surveyor**

\_\_\_\_\_  
**Chancery Clerk**

**CERTIFICATE OF FILING AND RECORDATION**

**STATE OF MISSISSIPPI**

**COUNTY OF MADISON**

I, \_\_\_\_\_, Clerk of the Chancery Court, in and for said  
County and State, do hereby certify that the Final Plat of \_\_\_\_\_,  
(Name of Subdivision)  
was filed for record in my office on this the \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_, and  
was duly recorded in Plat Cabinet \_\_\_\_\_, at slide \_\_\_\_\_ of the records of maps and  
plats of land of Madison County, Mississippi.

Given under my hand and seal of office, this the \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_.

\_\_\_\_\_  
Chancery Clerk

**PROFESSIONAL ENGINEER'S CERTIFICATE**

I, \_\_\_\_\_, Registered Professional Engineer with the State  
of Mississippi do hereby certify that \_\_\_\_\_ meets all rules,  
(Name of Subdivision)  
regulations, and ordinances as required by the City of Madison except for those altered  
by official action of the Mayor and Board of Aldermen.

\_\_\_\_\_  
Registered Professional Engineer

(SEAL)

The property shown hereon is located in Zone \_\_\_\_\_ according to FEMA-FIRM Flood

Insurance Rate Map Number \_\_\_\_\_, effective date \_\_\_\_\_.

**OWNER'S ACKNOWLEDGEMENT**

**OWNER'S ACKNOWLEDGMENT      STATE OF MISSISSIPPI      COUNTY OF MADISON**

**PERSONALLY** appeared before me, the undersigned officer in and for the said County and State, the within named, \_\_\_\_\_, the Owner, who acknowledged to me that he signed and delivered this plat and the certificate thereon as his own act and deed for and in behalf of said Owner after being authorized to do so on the day and year herein mentioned.

**GIVEN UNDER MY HAND AND SEAL OF OFFICE** on this the \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_.

\_\_\_\_\_  
**Notary Public**

**My commission expires:**

\_\_\_\_\_

**CITY OF MADISON  
LAKES: DEEDED TO HOMEOWNERS ASSOCIATIONS**

Lakes to be deeded to homeowners associations as “quasi-public” recreation areas within the corporate limits of the City of Madison are subject to the following regulations:

1. Proposed new Lake Site Construction:
  - A. New construction in conjunction with subdivision development is subject to approval under the same procedure as general subdivision regulations.
  - B. Developer must furnish proof of consultation and (proposed) site inspection by each of the following:
    1. Natural Resources Conservation Service technical personnel
    2. Miss. Dept. of Wildlife Fisheries and Parks
  - C. Dams shall have slopes no steeper than 3:1 on either side and should meet Natural Resources Conservation Service required top width relative to the height. At the time of construction, a drain pipe and an overflow pipe, must be installed, utilizing antiseep collars. These devices may be separate or in combination, but must be of a size sufficient for the watershed area and be of recommended and approved construction materials for long service. An emergency spillway to carry excessive runoff from heavy rainfall may also be required.
2. Existing lakes (prior to subdivision development) included within or adjacent to a subdivision and deeded to a “Homeowners Association”, within or adjacent to that subdivision(s).
  - A. Subdivision development around or adjacent to a lake is subject to approval under the same procedure as general subdivision regulations.
  - B. Developer must furnish proof of consultation and on site inspection by each of the following:
    1. Natural Resources Conservation Service technical personnel
    2. Miss. Dept. of Wildlife Fisheries and Parks
  - C. Existing conditions shall be reviewed in contract to standards for new lakes\* (\* see Part 1.c.) and the governing authority shall determine whether or not partial or complete renovation shall be necessary for the dam and lake site to be brought up to standards.
3. Storm drainage from curb and guttered streets may not be discharged into a lake site except by special permit after determination of engineering and/or other difficulties.

4. Site grade work at adjacent lots must be completed prior to impoundment of the lake unless otherwise permitted in Part 2.c. Every effort should be made to minimize potential soil erosion problems.
5. Shoreline depth should drop rapidly to a depth of approximately three feet (3') to minimize problems with aquatic vegetation. A slope of 3:1 is preferred.
6. Stocking of sportfish shall be done in accordance with the recommendations of a fisheries biologist of the Mississippi Department of Wildlife Fisheries and Parks.
7. Boat docks, covered piers, etc. shall fall under the same regulations and guidelines as "Accessory Structures."
8. These aforementioned regulations shall not be deemed to apply to a private lake constructed on private property by a private individual for the sole use of immediate family and authorized guests. The private individual shall have sole responsibility for construction and property maintenance according to standards for public safety and health.

**AN ORDINANCE ADOPTING THE RECODIFICATION OF THE SUBDIVISION  
REGULATIONS OF THE CITY OF MADISON, MISSISSIPPI**

BE IT ORDAINED BY THE MAYOR AND BOARD OF ALDERMEN OF THE CITY OF  
MADISON:

**SEC. ONE. TEXT.**

The Subdivision Regulations of the City of Madison, Mississippi, as set forth in the document on file in the office of the City Clerk and incorporated herein by reference, are hereby confirmed, ratified and adopted in furtherance of the purposes set forth therein.

**SEC. TWO. SEVERABILITY AND REPEALER.**

If any provision of this Act, the amendments made by this Ordinance, or the application of such provision or amendment to any person or circumstance is held to be unconstitutional, the remainder of this Ordinance and the application of the provisions of such to any person or circumstance shall not be affected thereby. Any ordinance in conflict with this enactment is hereby repealed to the extent of the conflict.

**SEC. THREE. EFFECTIVE DATE.**

This Ordinance shall be effective thirty days from and after passage.

\* \* \* \* \*

The above and foregoing Ordinance having previously been reduced to writing, a motion was made by Alderman Hickok and a second by Alderman Howland to approve and adopt the Ordinance and no request having been made by the Mayor or any member of the Board of Aldermen that said Ordinance be read by the City Clerk before a vote was taken. Said Ordinance was adopted by the Board of Aldermen with results being as follows:

Alderman Clingan-Smith voted:	<u>Yea</u>
Alderman Tatum voted:	<u>Yea</u>
Alderman Peeler voted:	<u>Yea</u>
Alderman Prather voted:	<u>Yea</u>
Alderman Hickok voted:	<u>Yea</u>
Alderman Hudgins voted:	<u>Yea</u>
Alderman Howland voted:	<u>Yea</u>

The motion having received the affirmative vote of all members of the Board of Aldermen present, the Mayor declared the motion so carried and this Ordinance adopted on this 5th day of February, 2008.

CITY OF MADISON, MISSISSIPPI

BY: Mary Hawkins Butler  
Mary Hawkins Butler, Mayor

ATTEST:

Susan B Crandall  
Susan Crandall  
City Clerk