CITY OF PRATTVILLE

PUBLIC WORKS MANUAL

SECOND EDITION

REVISED JANUARY, 1994

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ARTICLE I

GENERAL REGULATIONS AND DEFINITIONS

Section 1. GENERAL REGULATIONS.

Section 1.1 From and after the date of adoption, the regulations contained herein shall be known as the Prattville Public Works Manual. Said regulations shall govern all public works or works offered for Public Maintenance occurring within the corporate limits of the City of Prattville as now or hereinafter established. Where applicable, these regulations shall also govern work on private land and in the police jurisdiction.

Section 1.2 The requirements of this ordinance are supplementary to the requirements and provisions of the City of Prattville Zoning Ordinance and shall not be interpreted as repealing any portion of those documents. In the case of overlapping or conflicting requirements, the stricter requirement shall prevail.

Section 1.3 Any owner of land within the limits of said jurisdiction as stated above wishing to develop or improve his property in such a way as to require any construction improvements regulated herein, shall submit plans and specifications as required to the City Engineer for review and approval. No such improvements shall be accepted for public maintenance unless constructed to the standards contained herein and approved and recommended by the City Engineer.

Section 1.4 The following standard note shall be required on all preliminary plat cover sheets. "All technical specification as shown and noted on these plans shall be constructed in accordance with the requirements of the most current edition of the City of Prattville's Public Works Manual. Where conflicts arise, City of Prattville standards will govern."

Section 1.5 Where conflicts arise in construction requirements between the City of Prattville's Subdivision Regulations and the City of Prattville's Public Works Manual, the Public Works Manual will govern.

Section 2. PENALTIES.

Section 2.1 Failure to comply with these regulations will result in the denial of acceptance for maintenance by the City of Prattville until such improvements comply with the requirements contained herein. In addition, no utilities shall be connected, no building permit, certificate of occupancy, or equivalent shall be issued until such time as the improvements or plans as appropriated have been approved by the City's Engineer.

Section 2.2 Should buildings, structures, grading or other work covered by these regulations be undertaken without full compliance with said regulations, the Mayor, in addition to other remedies, may institute injunction mandamus or other appropriate actions or proceedings.

Section 3. DEFINITIONS.

Section 3.1 City's Engineer shall mean that person, firm or corporation hired, appointed, assigned to act, or otherwise employed by the City of Prattville to provide engineering services for a project or projects.

Section 3.2 Commission shall mean the City of Prattville Planning Commission.

Section 3.3 Council shall mean the Prattville City Council.

Section 3.5 All other words and phrases shall have their normal meaning in the written language or as a technical planning, engineering or legal term as is appropriate to the context.

Section 4. **BONDS.**

Section 4.1 Bonds or irrevocable letters of credit, in a form approved by the City Attorney and in an amount and time limit approved by the City's Engineer may be accepted by the City Engineer in lieu of any or all actual improvements required by this ordinance.

Section 4.2 Upon default by any developer, contractor, or other person posting any bond or irrevocable letter of credit under the provisions above, the City Engineer shall cash said bond or letter of credit and complete the project or have it completed.

Section 4.3 In the event that the bond or letter of credit is insufficient to complete the project in accordance with accepted plans, the City may, at its discretion, enter any additional cost as a lien against the subject property.

ARTICLE II
STREETS AND HIGHWAYS
DESIGN CRITERIA

Section 1. **CITY OF PRATTVILLE STANDARD PAVEMENT SECTION**

Section 1.1

1½"	A.H.D. Section 416-A, Mix 1 Wearing Surface
	A.H.D. Section 405 Tack Coat
2½"	A.H.D. Section 327-A, Mix 1 Black Base
	A.H.D. Section 401-A Prime Coat
4"	A.H.D. Section 823 Soil Aggregate Base (Placed at 100% ASTM D-698)

Section 1.2 Prior to placement of the solid aggregate base, the final six (6) inches of subgrade should be compacted to 98% ASTM D-698 as per A.H.D. Section 230 modified roadbed.

Section 1.3 Prior to placement of the black base, the entire roadway section should be proof-rolled with a ten (10) ton (total load) single axle truck under the observation of City Engineering Department personnel or the City's designated representative in an attempt to detect isolated soft/yielding areas.

Section 1.4 Material specifications shall be taken from the Alabama Highway Department's (A.H.D.) Standard Specifications for Highway Construction - 1992 edition.

NOTE 1: Traffic loading generally corresponding to a traffic class 2 as defined by the Alabama Asphalt Pavement Association's Asphalt Pavement Design Guide: A truck is defined as a 2 axle, 6 tire vehicle having a gross vehicle weight of 20,000 pounds or greater. Light panel trucks and pick-up trucks are not included. Collector/distributor streets may require additional asphalt base thickness on a site specific basis as developed by each design engineer and approved by the City Engineer.

NOTE 2: The California Bearing Ratio (CBR) Test is a test performed on the subgrade to determine the required thickness (AASHTO T-193 Test Method).

NOTE 3: The City Engineer may elect, on a site specific basis, to perform subgrade sampling/testing to verify CBR values. Where CBR subgrade values are proven by the City's selected testing agency to be 10 or greater, 1" of A.H.D. Section 327-A, Mix 1 Black Base shall be deleted from the "Standard" for those specific streets. Where CBR subgrade values are proven to be less than 6, 1" of A.H.D. Section 327-A, Mix 1 Black Base shall be added to the "Standard" for those specific streets.

NOTE 4: All paving sections may be revised on a site specific basis at the discretion of the City Engineer.

Section 2. MAJOR STREET PLAN

Section 2.1 All proposed streets, roads and developments must conform to or be compatible with the City of Prattville Thoroughfare Plan, which is a part of the Prattville Comprehensive Plan. This plan should be consulted prior to any development. Construction shall not commence on any new public street or street proposed for public use until the same has been reviewed by the Commission as provided in Section 11-52-11 of the Code of Alabama, 1975. Copies of the Prattville Comprehensive Plan may be obtained at the office of the City Engineer.

Section 3. UTILITY EASEMENTS

Section 3.1 The location of utility easements on all subdivisions shall be shown on the plan drawings. Each utility (gas, water, power cable, telephone, etc.) must be located in the plan view with distances referenced from the street centerline.

Section 4. INTERSECTION GEOMETRICS

Section 4.1 No more than two (2) streets shall cross the same point. In so far as practical, acute angles at street intersections shall be avoided. Intersections of less than eighty-five (85) degrees (measured at the centerline of streets) shall not be permitted.

Section 4.2 Radii at street intersections shall not be less than twenty five (25) feet, and where the angle of the street intersection is less than ninety (90) degrees, a greater radius may be required.

Section 4.3 Public streets which enter from opposite sides shall be directly opposite to each other or they shall be separated by at least one hundred twenty-five (125) feet between their centerlines, measured along the centerline of the intersected street. The use of "T" intersections is encouraged within residential subdivisions provided this separation can be attained.

Section 5. ENTRANCES, EXITS, DRIVES, NEW STREETS AND ROADS

Section 5.1 All connections of entrances, exits, drives, new streets and roads shall have the approval of the City Engineer or a designee prior to their construction. The City Engineer shall have the power to barricade and close any such entrance, exit, drive, new street or road constructed without approval.

Section 5.2 Approval of any turnout site plan shall not constitute approval of any entrance or exit. Such approval shall be granted in accordance with procedures elsewhere in this Article.

Section 5.3 New public streets or roads or extensions of existing public streets or roads, not a part of a required subdivision plan shall be approved or disapproved by the Commission following review by the City's Engineer, Police Chief, and Fire Chief.

Section 5.4 Entrances, exits, drives, new non-public streets or roads, or the extension of existing non-public streets or roads, which are not the result of developments requiring site plans or subdivisions requiring subdivision approval, shall be submitted to the City

Engineer in a manner prescribed by him or her. The City Engineer shall approve or disapprove each such submittal within 30 calendar days. The City Engineer or his designee may approve drives, entrances and exits without consultation beyond the City Engineer's office. New non-public streets and roads, extensions thereto and all entrances, exits, and drives for multi-family structures or apartments, mobile home parks, commercial or industrial structure complexes shall not be approved without consultation with the City's Engineer, the Police Chief and Fire Chief.

Section 5.5 All entrance and exit driveways shall be located to afford maximum safety to traffic, provide for safe and convenient ingress and egress to and from the site, and to minimize conflict with the flow of traffic.

Section 5.6 Any exit driveway or driveway lane, other than to serve single house or mobile home, shall be so designed in profile and grading and shall be located to provide the following minimum sight distance measured in each direction. Sight distance measurements shall be from a driver's eye height of 3.5 feet above the pavement to an approaching object height of 4.25 feet above the pavement on that portion of the exit driveway that is 15 feet from the edge of the pavement of the road into which the driveway enters.

85TH PERCENTILE SPEED	REQUIRED SIGHT DISTANCE EACH DIRECTION
25 MPH	250 FT.
30 MPH	300 FT.
35 MPH	350 FT.
40 MPH	400 FT.
45 MPH	450 FT.
50 MPH	500 FT.

Section 5.7 At sites occupying a corner of two (2) intersecting roads, no driveway entrance or exit shall be located within fifty (50) feet of the point of tangency of the existing or proposed curb radius of that site.

Section 5.8 Driveways used for two-way operation shall intersect the road at an angle as near to ninety (90) degrees as site conditions will permit and in no case will be less than sixty (60) degrees.

Section 5.9 Driveways used by vehicles in one direction of travel (right turn only) shall not form an angle smaller than forty-five (45) degrees with a road.

Section 5.10 The dimensions of driveways shall be designed to adequately accommodate the volume and character of vehicles anticipated to be attracted daily onto the land development for which a site plan is prepared. The required maximum and minimum dimensions for driveways are indicated below. Driveways serving large volumes of daily traffic or traffic of over fifteen (15) percent truck traffic shall be required to utilize high to maximum dimensions.

	ONE-WAY OPERATION* DRIVEWAY WIDTH	TWO-WAY OPERATION* DRIVEWAY WIDTH	CURB RADIUS
1 FAMILY	10 - 12 FT.	10 - 12 FT.	5 FT.
3-10 FAMILY	20 FT.	20 - 25 FT.	15 FT.
10 FAMILY+	20 - 25 FT.	20 - 35 FT.	15 FT.
COMM. & IND.	20 - 30 FT.	25 - 35 FT.	20 FT.

* The driveway grade shall not exceed twelve (12) percent within the right-of-way area percent within any ten (10) feet of distance.

Note: The width ranges shown are for two lane drives. Multi-lane driveway dimensions should be increased by 11-14 feet per additional lane beyond two lanes.

Section 5.11 New commercial driveways on arterial streets or boulevards shall not be spaced closer than 125 feet from centerline to centerline except on streets bearing traffic lanes separated by medians.

Section 5.12 Sight lines to be maintained: Proper sight lines shall be maintained at all intersections of streets. Measured along the centerline, from a point of intersection, there shall be a clear sight triangle of seventy-five (75) feet for local and collector streets and one hundred fifty (150) feet for arterial streets. This shall be indicated on all plans. No building or obstruction shall be permitted in this area.

Section 5.13 Rounding at street corners: Property lines at street intersections shall be rounded with a radius of twenty (20) feet, or of greater radius where the engineer may deem it necessary. Comparable cutoffs or chords may be permitted in place of rounded corners.

Section 5.14 Unusable reserve strips: Reserve strips controlling access to streets shall not be allowed except where such control is placed with the City under conditions approved by the Planning Commission.

Section 6. STREET STANDARDS

Section 6.1 New public streets shall meet the following standards. Public right-of-ways may be used for the installation of public utilities with the permission of the City Engineer.

Section 6.2 Minimum street right-of-way widths: Street right-of-way widths shall be as shown in the community plan or, where not shown, they shall not be less than as follows:

STREET TYPE	RIGHT-OF-WAY
*ARTERIAL BOULEVARD	120 FEET**
*ARTERIAL STREET	100 FEET
*COLLECTOR STREET	65 FEET
MINOR STREET	50 FEET
MARGINAL ACCESS ST.	50 FEET
CUL-DE-SACS & LOOPS	50 FEET
ALLEYS	24 FEET

* Major street

** The maximum amount of right-of-way deemed reasonable to be required by dedication shall be 120 feet in normal situations. However topography may dictate greater widths when crossing difficult terrain. It is also deemed reasonable that an additional 20 feet setback be required along proposed arterial highways and streets, in addition to the setback required in the Zoning Ordinance.

Note: A six lane median divided roadway should have a reserved right of way of 150 feet and a seven lane roadway should have a reserved right of way width of 130 feet.

Section 6.3 Minimum Roadway Widths.

STREET	LANES	PAVEMENT WIDTH FROM CURB FACES
ARTERIAL BOULEVARD	5 **	60 FEET
ARTERIAL STREET	4	51 FEET
COLLECTOR STREET	3 **	42 FEET
MINOR STREET	2	29 FEET
MARGINAL ACCESS STS.	2	29 FEET
CUL-DE-SACS & LOOPS	2	29 FEET
ALLEYWAYS	--	20 FEET

* or 4 plus a median
** or 2 plus a median

Note: Minimum dimensions should be increased by 11-14 feet for additional lane.

Section 6.4 Additional width on existing streets: Owners of development that adjoin existing streets shall dedicate additional right-of-way to meet the minimum street requirements specified above.

a. The entire right-of-way shall be provided where any part of the development is on both sides of the existing street.

b. When the development is located on only one (1) side of the existing street, one-half (1/2) of the required right-of-way, measured from the center line of the road way shall be dedicated.

Section 6.5 Street Grades: Street grades shall not exceed the following unless otherwise recommended and approved by the City Engineer.

STREET TYPE	PERCENT GRADE
ARTERIAL BOULEVARD	03.0%*
ARTERIAL STREET	05.0%*
COLLECTOR STREET	7.0%*
MINOR STREET	12.0%*
MARGINAL ACCESS STS.	12.0%*
CUL-DE-SACS & LOOPS	12.0%*
ALLEY	12.0%*

* Vertical curves shall be such as to prevent abrupt change and shall be as approved by the City Engineer.

Section 6.6 Gutter Grades: The minimum grade of any gutter shall not be less than five tenths of one (0.5) percent unless otherwise approved by the City Engineer. Cross drains are not permitted on streets of collector level or above unless recommended by the City Engineer.

Section 6.7 Horizontal Curves: Where a deflection angle of more than ten (10) degrees in the alignment of a street occurs, a curve of reasonably long radius shall be introduced. On streets sixty-five (65) feet or more in width, the centerline radius of curvature shall be not less than three hundred (300) feet: and on other streets, not less than one hundred (100) feet.

Section 6.8 Vertical curves: Every change in grade shall be connected by a vertical curve constructed so as to afford a minimum sight distance of two hundred (200) feet, said sight distance being measured from the drivers eye, which is assumed to be three and one-half (3-1/2) feet above the pavement surface to an object six (6) inches high on the pavement. Profiles of all streets showing natural and finished grades drawn to a scale of not less than one (1) inch equals one hundred (100) feet horizontal, and one (1) inch equals twenty (20) feet vertical, may be required by the City's Engineer. Delta, Tangent and Radius shall be noted on the vertical profiles. On major streets greater sight distance may be required by the City Engineer. Combinations of vertical and horizontal curvature shall be reviewed on an individual basis to assure compliance with standard traffic engineering requirements.

Section 6.9 Cul-de-sacs (dead end streets).

a. Turn-a-rounds required: Minor terminal streets or courts designed to have one end permanently closed shall be no more than one thousand feet long unless greater length is necessitated by topography. All such streets shall be provided at the closed end with a turn-a-round having an outside roadway diameter of at least eighty (80) feet and a street right-of-way of at least one hundred (100) feet.

b. Temporary turn-a-rounds: Where, in the opinion of the Planning Commission, it is desirable to provide for street access to adjoining property, proposed streets shall be extended by dedication to the boundary of the subdivision. Such streets shall have a right-of-way of at least fifty (50) feet and be provided with a temporary turn-a-round having a roadway diameter of at least eighty (80) feet (not required if stub out is only one (1) lot in depth).

Section 6.10 Alley:

a. Where required: Alleys shall be provided in commercial and industrial developments unless waived by the City Engineer.

b. Where optional: Provisions for alleys along the rear of residential lots are optional except where, in the opinion of the Planning Commission, such alleys are advisable.

c. **Alignment:** At all intersections, changes in alignment shall be avoided, but where necessary, corners shall be cut off sufficiently to permit safe vehicle movement.

d. **Dead ends:** Dead end alleys shall be avoided where possible, but if unavoidable, shall be provided with an adequate turn-a-round as required by the City Engineer.

Section 6.11 **Alternative Street Standards:** Developments not located within the corporate limits of the City of Prattville, in which public streets shall be accepted and maintained by a county government, may be developed to such standards and using such surfaces as the county shall direct, provided that:

a. Right-of-way widths and curb and gutter requirements shall not be less than those required by these regulations for comparable City road types.

b. All public roads shall be paved.

Section 7. **STREET DRAINAGE**

Section 7.1 All gutters, drains, culverts, sewers and inlets shall be kept clean and open at all times for surface drainage. No damming or ponding of water in gutters or other waterways will be permitted, except to a very limited extent where the Engineer shall consider the same necessary. Flow of water across or over pavements, except through approved pipe or properly constructed troughs, shall not be allowed. Inlets shall be located at the upgrade side of all public road intersections.

Section 7.2 The ultimate pipe drainage system should begin where the quantity of water in the street gutter approximately equals the capacity of a curb opening inlet. Thereafter, inlets shall be placed at a maximum of four hundred (400) feet or where projected flow exceeds gutter capacity.

Section 7.3 The City of Prattville requires the use of an "S" type inlet.

See Illustration No. 1, Appendix

Section 7.4 Pipes 24 inches in diameter and smaller shall be laid on straight lines and grades.

Section 7.5 For pipes 27 inches in diameter and larger, horizontal and vertical curves may be used provided the joint openings do not exceed one-third (⅓) the depth of the groove.

Section 7.6 The grade of the main pipe shall be carried through the invert of structures unless greater drop is required by hydraulic conditions. A minimum drop of 0.1 feet shall be provided through the invert of any structure.

Section 8. **SIDEWALKS**

Section 8.1 **Sidewalks required**: Sidewalks shall be required on both sides of arterial and collector streets. Sidewalks are required on one side of all other streets except alleys, cul-de-sacs upon which twenty or fewer lots front, and loop streets upon which forty or fewer

lots front. The City Council will not accept maintenance for any street upon which a sidewalk has not been built, if such is required by this ordinance, and the Council may direct the City Engineer to close off entrance to said street until the required sidewalk is constructed. Sidewalks shall not be less than sixty (60) inches in width on arterial and collector streets and forty-eight (48) inches on other streets.

Section 8.2 **Location:** Sidewalks shall normally be placed on the public right-of-way one (1) foot in from the property line. Under special conditions of terrain or other factors, the Planning Commission may approve alternate designs.

Section 8.3 Sidewalks shall be constructed with 3,000 psi concrete mix and shall be scored at five (5) foot intervals with expansion joints at a maximum of thirty (30) foot intervals.

Section 9. **BLOCKS**

Section 9.1 **General requirements**: The lengths, width and shapes of blocks shall be determined with due regard to:

a. Provisions of adequate building sites suitable to the special needs of the type of use intended.

b. Zoning ordinance and health department requirements as to lot size and dimensions.

c. Need for convenient access, circulation, control and safety of street traffic.

d. Limitations and opportunities of topography.

Section 9.2 **Length:** Shall be as the Planning Commission considers necessary to secure efficient use of land or desirable street patterns.

Section 9.3 **Width:** Blocks shall be wide enough to allow two (2) rows of lots, except where reverse frontage on a major street is provided or where prevented by topography or size of the property, in which case the Planning Commission may approve a single row of lots of suitable depth.

Section 10. **NAMES**

Section 10.1 **Street names:** No street names shall be used which will duplicate by spelling or sound or otherwise be confused with the names of existing streets, except where a proposed street is an extension of an existing street, in which case the proposed street shall bear the name of the existing street.

Section 10.2 Naming of streets shall be consistent with the directional line of the street as follows:

Through street lying east and west	Avenues
Through streets lying north and south	Streets
Through streets lying other than what can be determined north and south or east and west	Roads
Cul-de-sacs running east and west	Courts

Cul-de-sacs running north and south	Places
Cul-de-sacs winding	Lanes
Multi-directional (continuous)	Drives
Semi-Circles and winding loops	Circles

Section 10.3 The Autauga County 911 Agency shall be notified of all new street names or changes to names prior to their approval by the Planning Commission and acceptance by the Council.

Section 10.4 Development names: Development names shall not be duplicated or be confusing with existing names. Such names are subject to the approval of the Planning Commission.

ARTICLE III
STREETS AND HIGHWAYS
CONSTRUCTION CRITERIA

Section 1. **GENERAL.**

Section 1.1 The specifications for construction of roads within the City of Prattville include the latest edition of the Alabama Highway Department Standard Specifications for Highway Construction. The following is a general discussion of these standards as well as additional standards determined by the City. If any conflict exists, the stricter standard will apply.

Section 2. **SITE WORK AND GRADING.**

Section 2.1 All streets, roads and service drives shall be graded so that the entire right-of-way can be constructed to the required cross section. Before grading is started, the entire right-of-way shall be first cleared of all stumps, roots, brush and other objectionable materials, along with all trees and other topographic features, not intended for preservation.

Section 2.2 The stumps, boulders, and other obstructions shall be removed to a minimum of four (4) feet below existing grade when encountered and scarified to a depth of twelve (12) inches below the subgrade.

Section 2.3 Stump holes and trenches must be carefully backfilled and tamped. Heavy sod and all soft, yielding or otherwise unsuitable materials must be removed and replaced with acceptable fill material.

Section 2.4 All suitable materials from roadway cuts may be used in the construction of fills, approaches, or at other places as needed. The fill shall be spread in layers and compacted. Compacted layers shall not be more than six (6) inches. Fills must be rolled in accordance with State Highway Department standards. The top twelve (12) inches of soil in both cut and fill sections shall have a dry weight density of at least equal to ninety-five (95) percent of that obtained by AASHTO Standard Method T-99.

Section 2.5 Grading must progress so as to insure good drainage and prevent formation of depressions where water may collect. When the natural soil cannot be made stable enough to support construction traffic, subgrade modification shall be performed as directed by the City Engineer.

Section 2.6 All underground utilities crossing paved streets shall be installed prior to final grading. Electrical and telephone cables crossing public streets shall be placed in adequately sized conduits.

Section 3. **BASE COURSE.**

Section 3.1 The base normally shall consist of two layers, the first layer shall be at least six (6) inches crusher run stone material compacted to 100% density. The second layer, if required, shall be bituminous concrete consisting of a hot mix, hot laid bituminous base constructed on the prepared underlying primed base.

Section 3.2 The blended mineral aggregate shall be graded and combined to meet the general composition limits by weights for the dry mix. Fine aggregate shall be local sand and gravel, crushed limestone or crushed slag.

Section 3.3 Course aggregate shall be local or commercial gravel, crushed gravel, crushed slag, crushed stone, or a combination of these.

Section 3.4 The blend of course and fine aggregate shall meet the following gradation, combined so as to produce a mix that will develop not less than 1,000 pounds Marshall Stability at 75 blows, or as shown on the approved plans or specified in the proposal.

TOTAL PASSING	PERCENT
1½ INCH SCREEN	100
¾ INCH SCREEN	70 - 100
⅜ INCH SCREEN	45 - 90
NO. 4 MESH SIEVE	25 - 70
NO. 8 MESH SIEVE	20 - 57
NO. 50 MESH SIEVE	7 - 24
NO. 100 MESH SIEVE	2 - 14
NO. 200 MESH SIEVE	0 - 8
BITUMEN (A-C 8)	3.5 - 6.5

Section 3.5 Local source material (pit run) shall have a P.I. of 6.0 or less.

Section 3.6 The proportion of bitumen to total aggregate by weight will be fixed in the job mix formula. The grade of asphalt shall be (AC-20) 85-100 penetration as directed by the City Engineer.

Section 3.7 Sampling and testing by an independent testing firm may be required at the discretion of the City Engineer.

Section 3.8 All bituminous mixture placement equipment shall be approved by the City Engineer.

Section 3.9 No bituminous mixture shall be placed unless the temperature is at least 40 degrees Fahrenheit (including wind-chill factor) and rising in the shade or during any severe weather conditions or seasons unless approved by the City Engineer.

Section 3.10 The depth of the base courses shall be determined utilizing sound Engineering practices based on the following:

a. Soil Support - The inherent ability of the native subgrade soil to support loads transmitted through the pavement.

b. Traffic Intensity - The weight and relative frequency of anticipated wheel loads.

Section 3.11 For satisfactory run-off, ⅜ inch rise per foot of pavement width is the minimum required crown.

Section 4. **PRIME COAT.**

Section.4.1 Prime shall not be applied until the base has been approved by the Engineer. Before applying the prime, the surface shall be swept and prepared.

Section 4.2 Loose material, dust, dirt, caked clay, and any foreign material that might prevent proper bond with the existing surface shall be removed for the full width of the treatment by means of revolving brooms, mechanical sweepers and blowers. Dust and other loose material not removed by mechanical means shall be removed with hand brooms. All sweeping shall be removed before any bituminous material is supplied.

Section 4.3 The base shall be sprinkled with water if the City Engineer so directs.

Section 4.4 Prime shall be applied at the rate of 0.25 gallons per square yard consisting of grade MC, RC, or RT, as approved by the City Engineer. Prime coats shall be applied at the following temperatures:

Cut-back Asphalt	70 degrees - 180 degrees
Emulsified Asphalt	60 degrees - 140 degrees

Section 4.5 Cleaning equipment, pressure distributor and bitumen heating equipment for application of prime coats and tack coats shall be approved by the City Engineer.

Section 5. **MATERIALS/MIXTURE**

Section 5.1 Unless the type of bitumen is specified on the plans or in the proposal, the Contractor may select for use either asphalt cement, grade AC-20 or AC-30, or tar of a grade approved by the City Engineer. The proportion of bitumen to total sample by weight shall be 3.5 percent to 7.0 percent.

Section 5.2 All mixes shall be tested to determine if an anti-stripping agent is needed. All mixes shall have a tensile strength ratio of at least 0.70 when tested in accordance with AASHTO T-283 as modified by AHD Procedure 361. However, if visual stripping occurs in the design or field production, an anti-stripping agent may be required if deemed necessary by the City Engineer.

Section 5.3 Silicone may be used in asphalt cement, not to exceed 2 oz. per 5000 gallons. Other additives shall not be added to the bitumen unless expressly authorized in writing by the City Engineer.

Section 5.4 The use of any unauthorized additive will be cause for rejection of the mixture.

Section 5.5 The bituminous plant mix shall be composed of a mixture of aggregate, filler if required, and bituminous material. Various aggregate fractions shall be combined in such proportions that the resulting mixture meets the gradation requirements within the composition of State of Alabama Highway Department Supplemental Specification No. 2-89(2) "Mix No. 1".

Section 6. **JOB-MIX FORMULA.**

Section 6.1 No work shall be started until the Contractor has submitted and received approval of his intended material sources and his job-mix formula. A copy of the approved job mix shall be available at the plant any time material is being delivered to the owner.

Section 6.2 The Contractor shall submit to the City's Engineer for approval a job-mix formula to be supplied from a specific plant.

Section 6.3 The job-mix formula shall allow for a minimum of a five percent difference in percent passing on each sieve larger than the #100 on which there is material retained, and this difference shall be maintained during production.

Section 7. **EQUIPMENT.**

Section 7.1 In general, choice of equipment will be left to the Contractor and it shall be his responsibility to provide equipment in the proper size and amounts to produce, deliver to the roadbed, spread, and compact the plant mixed material in sufficient quantities for the continuous movement of the spreaders under normal operation conditions.

Section 7.2 The contractor shall secure approval of all equipment prior to beginning work and any equipment found unsatisfactory shall be promptly replaced or supplemented.

Section 8. **SCALES.**

Section 8.1 A digital recorder shall be installed as part of the platform truck scales. The recorder shall produce a printed digital record on a ticket of the gross and tare weights of the delivery trucks along with a time and date print for each ticket. Provisions shall be made so that scales may not be manually manipulated during the printing process, and so interlocked as to allow printing only when the scale has come to rest. The scales and recorder shall be of sufficient capacity and size to accurately weigh the heaviest loaded truck or tractor trailers that are used for delivery of the bituminous concrete from the plant.

Section 9. **HAULING EQUIPMENT.**

Section 9.1. Trucks used for hauling bituminous mixtures shall have tight, clean, smooth metal beds which have been thinly coated with a minimum amount of paraffin oil, lime solution or other approved material to prevent the mixture from adhering to the bed. The use of gasoline, kerosene or other volatile material is prohibited. The truck shall be equipped with a cover of canvas or other suitable material of such size as to protect the mixture from adverse conditions. Each shall have a hole in the side of the body, approximately 5/16" in diameter and suitably placed to allow for temperature measurement of the bituminous mix when the air temperature is below 60 degrees Fahrenheit or hauling time exceeds 30 minutes, or threatening weather exists. No mixture shall leave the plant unless it is covered entirely and the cover securely fastened.

Section 10. BITUMINOUS PAVERS OR SPREADERS

Section 10.1 All bituminous pavers or spreaders used for mainline paving, including shoulders and interchange ramps, shall be equipped with a full width vibratory, or other compactive type screed. The augers used to move the material across the width of the screed shall extend within one foot of the edge of the screed. It will be permissible to use a hydraulically extendable strike-off for paving turnouts and short sections of pavement including variable width sections and crossovers.

Section 10.2 When laying mixtures, the paver shall be capable of being operated at forward speeds consistent with satisfactory laying of the mixture, providing a finished surface of the required evenness and texture without tearing, gorging or shoving of the mixture.

Section 11. COMPACTION EQUIPMENT.

Section 11.1 Compaction equipment shall be self-propelled and capable of compacting the mixture throughout the depth of the layer while it is still in a workable condition without damage to the material.

Section 11.2 The compaction shall be accomplished with the use of a steel wheel breakdown roller, followed by a multi-wheel pneumatic tired roller.

Section 12. WEATHER.

Section 12.1 The mixture shall be laid only upon an approved underlying course which is dry and only when weather conditions are suitable. The City's Engineer may, however, permit work of this character to continue when overtaken by sudden rains, up to the amount which may be in transit from the plant at the time, provided the surface just ahead of the placing is swept clear of water and the mixture is within the temperature limits specified. The layer placed under such conditions shall be at the Contractor's risk and shall be removed and replaced by him without extra compensation should it prove unsatisfactory.

Section 12.2 Bituminous plant mix layers of 200 pounds per square yard or less shall not be placed when the surface or air temperature, taking into account the wind-chill factor, is below 40 degrees Fahrenheit before the spreading operation is started. Rolling and finishing operations shall be completed during the daylight hours.

Section 13. PERFORMANCE.

Section 13.1 The underlying surface must be approved before placing of a plant mix application will be allowed. The underlying surface, whether an old surface or a new surface, shall be thoroughly cleaned of all foreign or loose material and maintained in such condition in advance of the surfacing work.

Section 13.2 When leveling of an existing pavement or base is provided by the plans, the surface shall be brought to proper grade and cross section with 327 asphalt base as per AHD spec.

Section 13.3 If the leveling is not placed in a uniform layer, it shall be compacted to the satisfaction of the City Engineer.

Section 13.4 Leveling shall include superelevating when so directed.

Section 13.5 When widening is required, the widening shall be placed at the locations designated by the City's Engineer. The requirements for the placing of the widening shall be the same, as far as practical, as for the placing of the normal roadway.

Section 13.6 The bituminous material shall be heated in a manner that insures the even heating of the entire mass under efficient and positive control at all times. Any bituminous material, which in the opinion of the City's Engineer, has been damaged shall be rejected.

Section 13.7 All aggregates shall be dried so that the moisture content at the time of mixing is less than 0.5 percent by weight in accordance with AHD Test 130. The temperature of the aggregate at the dryer shall not exceed 350 degrees Fahrenheit.

Section 13.8 The aggregate, immediately after being heated, shall be screened into three or more sizes and conveyed into separate bins, ready for matching and mixing with bituminous material. However, for mixes using aggregates of one-half inch maximum size, the number of bins may be reduced to two.

Section 13.9 For bituminous pavement wearing layers, spreading operations shall be so correlated with plant and hauling equipment that the spreading operation, once begun, shall proceed at a speed as uniform and continuous as practical. The continual forward movement of the spreader requires the use of hauling vehicles capable of supplying the spreader with bituminous material while the spreader is in motion. Repetitive interruptions or stopping of the spreader shall be cause for the City's Engineer to stop the work until a definite action plan is developed for correction of the interruptions. Any interruption will require a thorough check of the area immediately under the spreader and any variances shall be corrected immediately or the material removed and replaced, as directed, without additional compensation.

Section 13.10 Material placed in the spreader shall be immediately spread and screened to such uniform depth that the average weight of the mixture required per square yard is secured. Alignment of the outside edges of the pavement shall be controlled by present control lines, and shall be finished in conformity with these controls.

Section 13.11 For areas inaccessible to mechanical spreading equipment, and when patching potholes and minor pavement failures, hand spreading of the bituminous mixture may be permitted. The mixture shall be distributed immediately in place by means of suitable tools and spread in a uniformly loose layer.

Section 13.12 As soon as the mixture has been spread and has set sufficiently to prevent undue cracking or shoving, rolling shall begin. A delay in the initial rolling will not be tolerated and initial or breakdown rolling should in general be performed by rolling longitudinally, beginning at the sides and proceeding toward the center of the surface. If the Contractor has not obtained the required density for a bituminous layer before

the temperature of that layer has dropped below 180 degrees Fahrenheit, he shall cease his paving operation until he has made the necessary adjustment in his operation to ensure that the density will be obtained prior to the temperature of the layer dropping below 180 degrees Fahrenheit.

Section 13.13 If any displacement occurs during rolling, it shall be corrected at once. To prevent adhesion of surface moisture to the rollers, the wheels shall be kept adequately moistened with water and a non-foaming detergent, but an excess of water will not be permitted.

Section 13.14 In places inaccessible to a roller, compaction shall be obtained with hand or mechanical tampers of adequate weight to produce required density.

Section 13.15 Placing of bituminous paving layers shall be as continuous as possible. All joints shall be made in a careful manner in such a way as to provide a smooth, well bonded and sealed joint.

Section 13.16 Density tests will be made at the City's Engineer's discretion, promptly during and upon completion of compaction so that density deficiencies may be corrected while the mixture is still workable. Areas of deficient density not corrected shall be removed and replaced without any additional compensation.

Section 14. GENERAL

Section 14.1 The finished surface of all base, binder and wearing surface layers shall not vary more than ¼ inch from the required section measured at right angles to the pavement centerline. The finished surface shall not vary more than ⅜ inch in any 25 foot section from a taunt string applied parallel to the surface and roadbed centerline at the following location: one foot inside the edges of pavement, at the centerline, and at other points as designated. The variance from the designated grade shall not increase or decrease more than ½ inch in 100 feet.

Section 14.2 Surface, binder and leveling pavement edges not confined by curbing or other structures shall be lightly tamped generally with a lute immediately behind the placement of operation, to form an approximate 1:1 slope as a preventative measure against cracking and bulging during the rolling process. This procedure shall also be required on the initial edge of a longitudinal cold joint. These edges shall be neatly shaped to line behind the breakdown roller and shall be trimmed as necessary after final rolling to an accurately lined string of wire providing a maximum tolerance of 2 inches outside the theoretical edge of pavement, with a maximum variation from a true line of ½ inch in 10 feet and a slope not flatter than 1:1. Edges that are distorted by rolling shall be corrected promptly.

Section 14.3 Deficiencies in surface smoothness shall be remedied to the extent practicable by rolling while the material is still workable. Otherwise the layer shall be removed and replaced as necessary to obtain required smoothness. "Skin patching" of a surface layer to correct low areas or healing and scraping to correct high areas will not be permitted. Overlays of not less than 80 pounds per square yards may be authorized

by the City Engineer for surface smoothness deficiencies, provided all material in the overlay is without additional cost to the City.

Section 14.4 All areas containing excessive or deficient amounts of bitumen, all areas showing segregation of material, and all areas unbonded after rolling shall be removed and replaced without additional compensation.

Section 14.5 Sections of newly finished work shall be protected from all traffic until they become properly hardened. Maintenance shall include immediate repairs of any defects that may occur on the work. Such repairs shall be repeated as often as necessary to maintain the work in a continuously satisfactory condition. The Contractor will be responsible for the protection of the work and protection of any traffic using the work. No extra compensation will be paid for maintenance and protection.

Section 14.6 The accepted quantity of bituminous plant mix used as directed will be measured in tons of 2000 pounds.

Section 14.7 The weight measurement shall include all components of the mixture. No deductions will be made for any of the components, including the bituminous.

Section 14.8 Deductions in measurement will be made for all material wasted or lost due to negligence of the Contractor or applied beyond the limits of the work.

Section 14.9 Compensation for plant mixture, measured as provided above, will be made on a tonnage basis. The contract unit price per ton shall be full compensation for construction of the bituminous plant mix layer complete, in place on the road bed as indicated or directed, including all materials, procurement, handling, hauling and processing cost, and includes all equipment, tools, labor and incidentals required to complete the work.

Section 14.10 Unless otherwise covered by a separate pay item, no additional payments will be made for excavation for widening, compacting the subgrade, backfilling, spreading or disposing of excess excavated material, removal and disposal of old pavement, and removal and re-setting of road-way signs, mailboxes and other miscellaneous items.

Section 14.11 MIX DESIGNATION.

SIEVE	AGGREGATE COMPOSITION PERCENT PASSING BY WEIGHT (SQUARE MESH TYPE)
MIX 1	
1 INCH SIEVE	100%
3/4 INCH SIEVE	95 - 100%
1/2 INCH SIEVE	80 - 100%
3/8 INCH SIEVE	54 - 74%
NO. 4 SIEVE	38 - 56%
NO. 8 SIEVE	25 - 44%
NO. 16 SIEVE	16 - 36%
NO. 30 SIEVE	10 - 26%
NO. 50 SIEVE	5 - 12%
NO. 100 SIEVE	3 - 8%
NO. 200 SIEVE	

Section 14.12 A tack coat shall be applied to the old surface or binder course, including all contact surfaces such as curbs, manholes, and adjacent pavement edges wherever encountered, and to the extent directed by the City Engineer.

Section 14.13 Tack coat material shall be heated or otherwise prepared to insure uniform distribution as directed by the City Engineer in the amount specified and shall be distributed as directed by the City Engineer in an amount of 0.1 gallons per square yard on a clean, dry prepared surface. Tack coat material shall be applied only far enough in advance to permit construction to progress uniformly and continuously after the curing period. Tack coat material shall not be applied so far in advance that the viscous quality will be reduced by traffic prior to construction. Tack coat that has lost its viscous quality before being covered shall be renewed and any which has been damaged shall be replaced.

Section 15. CONSTRUCTION OF OVERLAYS.

Section 15.1 Vertical faces of pavement, curbs, gutters, drainage, gratings, manholes, and other contact surfaces should be sprayed or painted with a uniform coating of asphalt, preferably emulsified asphalt. This work shall be done in such a way as not to stain exposed curb or gutter surfaces. Asphalt coatings on vertical surfaces shall be protected from dust and dirt. This should be done immediately prior to pavement construction.

Section 15.2 When the pavement has been prepared, placing the overlap to the predetermined thickness, whether for surface improvement or structural improvement, should proceed without delay.

Section 15.3 Construction procedures for asphalt overlays are the same as for asphalt pavement construction described earlier.

ARTICLE IV
REQUIREMENTS FOR TESTING

Section 1. The following steps shall be followed in general for the testing and acceptance of all streets to be maintained by the City of Prattville whether publicly or privately constructed.

Section 1.1 Step 1. On submission of a preliminary plan, site plan, or upon Council approval to go to bid on a City street project, the City Engineer will order tests of proposed streets to develop paving recommendations (borings, soil analysis, CBR, proctor density). These recommendations will become a part of the plans submitted, or of the bid documents, as is appropriate.

Section 1.2 Step 2. Upon commencement of construction, the Contractor shall notify the City Engineer. The City's testing laboratory, if requested by the City Engineer, shall make visual observations of clearing and grubbing operations.

Section 1.3 Step 3. Upon completion of clearing and grubbing, the Contractor shall notify the City Engineer prior to beginning earthwork operations. The testing lab will arrive on-site to assure that the subgrade is being processed (i.e., scarified and mixed to a homogeneous color/texture) before compacting. In general, this testing will consist of visual tests and densities of a maximum of one test every 3500 sq. ft. Upon completion of subgrade and all utilities within the street right-of-way, trenches shall be backfilled by compaction or flooding. Compaction tests shall be taken every 100 linear feet by trench and one foot thickness of fill. Flooding shall be performed under the direction of the testing laboratory.

Section 1.4 Step 4. Upon acceptance of the subgrade and trenches, the testing lab shall examine the base material prior to placing on the street. This will consist of soil analyses and proctor densities.

Section 1.5 Step 5. The base material shall be processed, placed into thickness and compacted as directed in the pavement requirements report. Again, this shall be done with a maximum of one test every 3500 sq. ft. under normal circumstances. The base and sub-base should be maintained in the condition in which they are accepted. Should either become saturated, disturbed or not maintained properly, they shall be rechecked prior to construction proceeding and any area showing deficiencies shall be corrected and retested.

Section 1.6 Step 6. The asphalt mix design shall be submitted and approved prior to paving operations.

Section 1.7 Step 7. The asphalt mix shall be inspected during productions (quantitative extraction, gradation, Marshall stability).

Section 1.8 Step 8. The streets shall be cored after paving for thickness and compaction. In general, coring should be performed every 200 feet.

ARTICLE V

CURB AND GUTTER SPECIFICATIONS

Section 1. **SAFETY REQUIREMENTS.**

Section 1.1 Every street should be designed and constructed in the safest possible manner. Every precaution shall be taken both during the construction and operation phases of each street to ensure the safety of the public. The safe operation of a roadway depends to an increasingly important degree on the proper use of traffic control devices. These devices include:

a. Pavement markings
b. Traffic signs
c. Traffic signals
d. Temporary signs utilized during construction, etc.

Section 1.2 Since the motorized public depends upon traffic devices as a guide in their driving, it is important that these devices be used uniformly, whether they are used on new highway, detours or temporary routes. Traffic devices shall be completely installed or constructed before any roadway is open to traffic.

Section 1.3 Devices which are no longer applicable, or those that may create confusion, shall be removed as soon as possible. Other devices required by road conditions or restrictions shall be removed when those conditions cease to exist or the restrictions are withdrawn.

Section 1.4 The application of all types of traffic devices, whether of a permanent or temporary nature, shall be governed by the requirements and principles set forth in the Alabama Manual of Uniform Traffic Control Devices.

Section 2. **PAVEMENT MARKINGS.**

Section 2.1 Pavement, curb and object markings may utilize a variety of materials. The basic requirements of the materials are that they provide the specified colors both day and night hours and that they maintain the required visibility throughout their lifetime.

Section 2.2 For night visibility of pavement markings, glass "beads" shall be embedded in the pavement marking material to produce a retrodirective reflecting surface.

Section 2.3 All pavement markings, except parking space markings, shall be reflectorized.

Section 2.4 Plastic markings should be used where heavy traffic rapidly destroys painted markings.

Section 2.5 Permanent built-in pavement markings in white or colored concrete or inlaid bricks or blocks shall not be used.

Section 2.6 Large "mushroom" buttons or bars of cast iron or concrete several inches high, with or without reflectors, light, symbols or messages, shall not be used. They may be used to designate pedestrian islands or to assist in channelizing traffic. In these applications they function as curbs or islands and they should be restricted to each application.

Section 2.7 Pavement markings shall be white, yellow or red in color. Through consistent use of markings, the colors should transmit to vehicle operators a consistent meaning. Yellow shall be used to delineate the separation of traffic flows in opposite directions, to mark left edge lines on divided highways, one-way roads and ramps or to mark objects that traffic must pass on the right.

Section 2.8 White markings shall be used to delineate the separation of traffic flows in the same direction or to mark objects that can be passed on the left or on both sides.

Section 2.9 Red delineators may be used to indicate that the vehicle operator is traveling in the wrong direction.

Section 2.10 White shall be used for:

a. Lane lines
b. Right pavement edge lines
c. Paved shoulder markings (unless otherwise specified)
d. Pavement width transitions (except transitions between traffic in opposing directions)
e. Channelizing lines
f. Approaches to obstructions (if obstruction is between lanes where travel is in the same direction)
g. Turn markings
h. Stop lines
i. Crosswalk lines
j. Approaches to railroad crossing (except centerlines and no-passing zone lines)
k. Parking space limits
l. Word and symbol markings
m. Lane use control markings

Section 2.11 Yellow shall be used for:

a. Center lines that separate traffic flows in opposite direction
b. Left pavement edge lines on multi-lane divided highways and interchange ramps
c. No-passing zone lines on two lane and three lane two-way roadways.
d. Pavement width transitions (only between opposing lanes of traffic and the no-passing zone line)
e. Approaches to obstructions (only between opposing lanes of traffic)
f. Approaches to railroad crossings (only the no-passing zone line or centerline portion)
g. Curb markings to indicate parking prohibitions covered by signs and/or ordinances
h. Curb markings to outline islands in the line of traffic

Section 2.12 Red is used for:

a. Delineation of roadways that shall not be entered or used by the viewer of those markings.

Section 2.13 All markings, whether placed on the pavement, on curbs or on an object, must be maintained in their original condition as nearly as possible. This makes necessary a continuing program of striping, curb marking and re-marking lines, works and symbols to revitalize the markings. It is essential, in the interest of uniformity, that these markings be maintained in the best possible conditions so they provide the specified color and patterns for both day and night operations.

Section 2.14 Pavement markings should be re-marked on a regular basis dependent upon the degree of wear to which they are subjected.

Section 2.15 The frequency of re-striping and re-marking is dependent upon the amount of traffic passing over the marking and on the durability of the materials used.

Section 2.16 Stop lines shall be used where it is desirable to indicate the point at which vehicle operators are required to stop in compliance with a stop sign, traffic control signal or other legal requirements.

Section 2.17 Stop lines shall be placed five (5) feet in advance of, and parallel to, the near crosswalk line. In the absence of a marked crosswalk, the stop line shall be placed at the required or desired stopping point. In no case shall it be placed more than thirty (30) feet or less than five (5) feet from the nearest edge of the intersecting roadway.

Section 3. TRAFFIC SIGNS.

Section 3.1 Traffic signs shall be used only where necessary and where justified by facts and field studies. Each sign shall conform to the standards set forth in the Alabama Manual on Uniform Traffic Control Devices. Each standard sign shall be displayed only for the specific purpose described in the manual. A conservative use of regulatory and warning signs is strongly recommended. Non-standard signs shall be replaced with standard signs as soon as possible.

Section 3.2 Traffic signs should ordinarily be located on the right side of the road where the vehicle operator is in the habit of looking for them. Under some circumstances signs may advantageously be placed on channelizing islands and, for sharp curves to the right, signs may be placed on the left shoulder of the road directly in front of approaching vehicles. A supplementary sign located on the left of the road is often helpful on a three or four lane road, or on a one-way roadway, where traffic in the right lane interferes with the vehicle operator's view to the right. In these cases the supplementary signs should be definitely more conspicuous than the signs normally placed.

Section 3.3 Signs should be located to optimize night visibility and in conformance with safety factors related to fixed obstacles near the roadway. Signs should be located not to obscure other signs or to be hidden from view by roadside objects. Signs requiring different decisions by vehicle operators shall be spaced sufficiently far apart for the required decisions to be made safely. The spacing shall be determined in units of time as determined by the expected vehicle approach speed.

Section 3.4 Stop signs shall not be erected at intersections controlled by traffic control signals.

Section 3.5 Normally, signs should be individually erected on separate posts or mountings, except where one sign supplements another, or where route or directional signs must be grouped. Signs erected at the side of the road where rural conditions exist shall be mounted at a height of at least five (5) feet above the level of the near roadway edge of pavement measured to the bottom of the sign. In business and residential areas, and in cases where there are other obstructions to the view, the height shall be at least seven (7) feet.

Section 3.6 Signs should have the maximum practical lateral clearance from the edge of the traveled way for the safety of vehicles who may leave the roadway and strike the sign supports.

Section 3.7 Normally signs should not be closer than six (6) feet from the edge of the shoulder, or if none, twelve (12) feet from the edge of the traveled way, except where physical conditions prevent such placement. Where a raised curb, a guard rail or a paved shoulder is present, a sign shall be placed with its nearest edge at least two (2) feet from the face of the curb, guard rail or paved shoulder.

Section 3.8 Sign posts and their foundations and sign mountings shall be constructed to hold signs in a proper and permanent position, to resist swaying in the wind and to resist displacement by vandalism.

Section 3.9 All traffic signs shall be kept clean, legible, and in proper position at all times. Damaged signs shall be replaced immediately.

Section 3.10 To ensure adequate maintenance, all signs should be inspected at least twice a year and any that are defective shall be cleaned, replaced or repaired. The sign inspection program shall include at least one night inspection.

Section 3.11 Special care shall be taken to see that weeds, shrubbery, and construction materials are not allowed to obscure the face of any sign.

Section 4. STREET NAME SIGNS.

Section 4.1 Street name signs of the type normally existing within the City shall be installed by the developer and should be installed at a corner not containing a stop sign (unless intersection is controlled by a 4-way stop).

Section 5. TRAFFIC SIGNALS.

Section 5.1 To ensure that drivers are provided with a clear, unmistakable indication of a right-of-way assignment, the use of more than one signal head on each approach shall be mandatory. The use of more than one signal face for each approach will provide a signal indication in the event of bulb burnout and obstruction of the vehicles operator's view of a particular signal head by some obstacle such as overhanging tree limbs or large trucks.

Section 5.2 Proper maintenance of traffic signals is important in securing safe and efficient traffic flow. Before installing any traffic control signals, the responsibility for the maintenance of signal shall be clearly established.

Section 5.3 To maintain the desirable operation of existing traffic control signals, engineering studies and inspections shall be regularly conducted to ensure that the desired operation is realized. The engineering studies should determine whether the installation continues to be justified, meets manual standards and the signal time in use meets the current traffic requirements. In addition, the inspection should note the general condition of traffic signals.

Section 6. **TEMPORARY SAFETY REQUIREMENTS.**

Section 6.1 All temporary traffic control devices shall be governed by the following basic principles described in the Alabama Manual of Uniform Traffic Control Devices (AMUTCD):

a. Traffic safety in work areas should be an integral part and high priority element of every project from planning through design and construction. Similarly, maintenance work should be planned and conducted with the safety of vehicle operators, pedestrians and workers kept in mind at all times.

b. Traffic movement should be inhibited as little as practicable.

c. Traffic movement should be guided in a clear and positive manner while approaching and traversing work areas.

d. To insure acceptable levels of operation, routine inspection of traffic control elements should be performed.

e. The maintenance of roadside safety requires constant attention during the life of a construction work area due to the potential increase of hazards.

Section 6.2 The closing of portions of any street shall be coordinated so as to interfere with traffic as little as possible. Suitable barricades and signs to direct traffic shall be provided and appropriately placed and maintained as long as necessary. Such barricades and signs shall be promptly removed when no longer needed. Plans for the complete or partial closing of any street or for any work which requires the presence of any personnel or equipment in the public right-of-way shall be approved by the Prattville Police Department. The City Fire Department and Police Department shall be notified in advance of the closing and of the re-opening of any street.

Section 6.3 Specific criteria described in the manual (AMUTCD) shall be strictly adhered to.

Section 7. **ON STREET PARKING.**

Section 7.1 Parking is prohibited for a minimum distance of thirty (30) feet from any signalized intersection and twenty (20) feet from any other intersection and must also comply with sight triangle restrictions noted earlier.

Section 7.2 In no case will on-street parking be permitted on streets in which the speed limit is greater than thirty (30) miles per hour.

Section 7.3 The City of Prattville encourages the use of well designed off-street parking in lieu of on-street parking. No new development shall be accepted, given approval, granted a certificate of occupancy, etc. unless it contains the minimum number of parking spaces required by the Prattville Zoning Ordinance.

Section 8. STREET LIGHTING.

Section 8.1 Street lighting should be installed at every intersection. In medium and high density areas, mid-block street lighting also is highly desirable. Unless approved by the City Engineer, City lights shall be placed no more often than every other pole.

Section 8.2 Street lighting design and standards should be in accordance with the latest recommendations of Alabama Power Company and the City Engineer.

Section 9. HANDICAP REQUIREMENTS.

Section 9.1 The City of Prattville encourages the placement of handicap parking spaces at each off-street parking lot and at selected on-street parking locations throughout the City. The City will install and maintain handicap parking places at public buildings. Any handicap parking space shall meet the requirements below.

Section 9.2 Each parking space reserved for the handicapped shall be so painted.

See *Illustration No. 2, Appendix*

In addition, a sign shall be installed meeting the requirements set out in the "Alabama Manual on Uniform Traffic Control Devices".

Section 10. WALKS.

Section 10.1 At least one accessible walk having no steps or abrupt changes in level, and complying with all criteria specified within this section, shall be provided from a parking space for disabled people. An accessible walk shall also be provided from a public sidewalk and a public transportation stop, if provided, into each accessible primary building entrance.

Section 10.2 Accessible walks shall also be provided between buildings on a common site.

Section 10.3 Accessible walks shall have a minimum clear width of forty-eight (48) inches.

Section 10.4 The slope of an accessible walk shall not exceed 1 in 20 or 5 percent gradient, otherwise the walk is considered to be a ramp.

Section 10.5 The cross slope of an accessible walk shall not exceed 1:48.

Section 10.6 Accessible walks less than sixty (60) inches in width shall have level zones, suitable for wheelchair passage or rest, spaced at no more than two hundred (200) feet apart, and measuring a minimum of 60" x 60".

Section 10.7 Wherever accessible walks cross other walks, driveways, or parking lots, they shall blend to a common level, by use of grading, curb cuts or ramps. Level changes greater than ¼ inches and less than ½ inches shall be beveled with a slope no greater than 1:2.

Section 10.8 Level changes exceeding ½ inches shall be treated as a ramp.

Section 10.9 Whenever possible, gratings should not be located within or along walks.

Section 10.10 When gratings must be located in accessible walks, the clear openings shall not exceed ½ inches in one direction. If grating openings are elongated, the long dimension shall be perpendicular to the predominant direction of travel.

Section 10.11 Doors swinging onto or away from walks shall have level areas.

Section 10.12 Walk surfaces shall be stable, firm and of sufficient texture to resist slippage.

Section 11. CURB RAMPS.

Section 11.1 A curb ramp shall be provided whenever a walkway intersects a curb.

Section 11.2 Curb ramps at street intersections shall be located within and to one side of marked crossings, unless adequate and safe maneuvering space (48 inches minimum clear space), permits positioning of curb ramps at diagonal corner locations.

Section 11.3 Curb ramps shall be located or protected to prevent their obstruction by parked vehicles or street furnishings.

Section 11.4 The maximum slope of curb ramps shall be 1:12, except for existing sidewalks, where a maximum slope of 1:8 may be used if it is impractical to install a more gradual slope.

Section 11.5 A flush, smooth transition shall be provided at the juncture of a curb ramp with grade or street level.

Section 11.6 The minimum width of a curb ramp shall be 36 inches, exclusive of flared sides.

Section 11.7 If a curb ramp is positioned where pedestrian traffic is likely to walk across the ramp, then it shall have flared sides with a maximum slope of 1:8.

Section 11.8 Where pedestrians are prevented from walking across the ramp, flared sides may be omitted.

Section 11.9 Built-up curb ramps are the least preferred method of curb ramping, and should only be used when no other alternative is available. Built-up curb ramps shall be located so they do not project into vehicular traffic lanes.

Section 11.10 Built-up curb ramps shall have flared sides.

Section 11.11 Surface of curb ramps shall be the same as for walking surfaces.

ARTICLE VI
SANITARY SEWER SYSTEM

Section 1. GENERAL

Section 1.1 Where a public sanitary sewer system is within twelve hundred (1200) feet of a development, the developer shall install a sanitary sewer system ~~which~~ meets the requirements of the City and shall connect such system at his expense to the public sanitary sewer. Stub-outs shall be provided for each lot and shall extend from the sewer line to the property line.

Section 2. DESIGN CRITERIA.

Section 2.1 Sanitary sewers shall be sized to insure that estimates of quantities of wastewater flows based upon present and future populations do not exceed pipe capacity. However, in no case will pipe less than eight (8) inches in diameter be allowed. Special consideration shall be given to pipe diameter if commercial and industrial customers are anticipated to contribute to the system.

Section 2.2 Sanitary sewer velocities should be sufficient to prevent deposition, yet not cause erosive damages to the pipe. In order to accomplish this, the sewer shall be sloped to achieve a minimum velocity of two (2) feet per second when the conduit is flowing half-full. The slope should also be designated so that the velocity will not exceed ten (10) feet per second.

Section 2.3 Leakage into the sewer shall not exceed two hundred (200) gallons per mile of sewer per inch of inside diameter of the sewer per 24 hours in any section between successive manholes. The amount of leakage shall be measured by a suitable weir or other device. This measurement shall be made between manholes.

Section 2.4 If the infiltration exceeds the above specified amount, necessary corrections shall be made to bring it within the acceptable limits. All visible leaks or points of infiltration shall be repaired, even though the infiltration is below the maximum specified.

Section 2.5 RECOMMENDED SLOPE TO ACHIEVE MINIMUM VELOCITY OF 2.0 FT./SEC., N=0.013

SIZE PIPE (INCHES)	SLOPE (FT./100 FT.)
8	0.40
10	0.28
12	0.22
15	0.15
18	0.12
21	0.10
24	0.08
27	0.07
30	0.06

Section 3. **TRENCH CONSTRUCTION SPECIFICATIONS.**

Section 3.1 Clearing and grubbing shall be confined to the limits of the easement and to the minimum width required for installation of the pipe. All trees, stumps, roots and debris shall be disposed of in an approved manner.

Section 3.2 The grades as shown on the approved plans is that to which the work must conform. Any variation from the grade will be deemed sufficient reason to cause the work to be rejected and rebuilt.

Section 3.3 All excavation of every description and of whatever substance encountered shall be performed to the depth specified on the approved plans and as staked in the field.

Section 3.4 All excavated material not required for filling shall be removed from the site and deposited at such a location and in such manner as may be directed by the Wastewater Superintendent.

Section 3.5 Running boards and saddle piles shall be two (2) inch Pecky Cypress or Southern pine creosote treated with 16 pound retention.

Section 3.6 Pipe encasement shall be used where shown on the approved drawings and as directed. The encasement used shall be bituminous coated welded steel pipe of all thickness and sizes shown on the drawings, or an approved equal. Pipe shall conform to ASTM Designation A-252 Grade 2. Encasement shall conform to AASHTO Standards and Alabama Highway Department Standards where placed under highways and to AREA 1-A-13 where placed under railroads.

Section 3.7 The sides of any trench shall be as nearly vertical as possible. Sloped sides may be used only in open country and then only as approved by the Wastewater Superintendent. If sloped sides are approved by the Wastewater Superintendent, the trench sides shall be vertical from the invert of the trench to a minimum of one foot above the top of the pipe.

Section 3.8 The width of the trench shall be kept to the minimum consistent with proper placement and backfilling of the pipe. The width, measured to trench walls and to the far side of sheeting, shall not exceed the outside diameter of pipe plus sixteen (16) inches.

Section 3.9 Maximum depth for PVC, Truss, or Clay pipe shall be fifteen (15) feet unless otherwise approved by the City Engineer.

Greater depths are allowable when installing ductile iron piping.

Section 3.10 The bottom of the trench shall be carefully graded, formed and aligned before any sewers are laid therein. Where the natural soil at the bottom of the trench makes a satisfactory foundation for the sewer, it shall be shaped to the bottom quadrant of the pipe and slightly hollowed under each bell to allow the body of the pipe to have a uniform contact throughout its entire length.

Section 3.11 Where the bottom of the trench does not, in the opinion of the City Engineer, make a suitable foundation for the sewer, the trench shall be deepened and backfilled with gravel, slag, or reef shell and shaped, or the pipe shall be placed on running boards.

Section 3.12 A berm at least two (2) feet in width shall be between the trench and the excavated material.

Section 3.13 No more than three hundred (300) feet of trench shall be opened at any one time in advance of the completed sewer nor left unfilled for more than two hundred (200) feet in the rear thereof, except by written permission of the Wastewater Superintendent.

Section 3.14 Excavation for manholes or other structures shall be of sufficient size to leave at least one (1) foot in the clear between their outer surfaces and the embankment, or timber which may protect it.

Section 3.15 Overcut in depths of manholes and sewer trenches shall be backfilled with gravel.

Section 4. DUCTILE IRON PIPE SPECIFICATIONS.

Section 4.1 Where ductile iron pipe is specified, it shall be Class 50 ductile iron manufactured in accordance with requirements of AWWA C151-76, or its equivalent for the mechanical joint pipe, or slip-on joints, if approved by the Wastewater Superintendent.

Section 4.2 The interior and exterior of all ductile iron pipe and fittings shall be coated with coal tar pitch.

Section 4.3 In general, this ductile iron pipe will be used at wet area crossings and at other points specifically designated on the plans, including force mains.

Section 5. SHORING AND SHEETING.

Section 5.1 When the material through which the trench is excavated, in the opinion of the City Engineer, tends to fall in, run, or cave, the sides of the trench shall be braced, open sheeted or close sheeted, to render the sides secure. Every precaution shall be exercised in removing the sheeting in order to avoid damaging the pipe. Should there be evidence that the removal of sheeting would damage the pipe, sheeting shall be left in place. The top of the sheeting left in place shall be at least twelve (12) inches below natural ground.

Section 6. LAYING SEWER PIPE.

Section 6.1 The pipes and specials shall be so laid in the trench that after the sewer is completed, the interior surface of the bottom thereof shall conform accurately to grade and alignment. Sewers shall be laid in the direction opposite to the direction of flow with spigot ends of pipe pointing down grade.

Section 6.2 While the pipes and specials are being laid between adjoining manholes in each straight or working section of the sewer, a round circle of light from the finished or other end of the section shall remain constantly in plain view throughout the entire

length of such section and shall show the true character and shape of the interior surface of the sewer. The same test shall be applied for each working section after the sewer is completed in all respects and before it is accepted.

Section 6.3 Before setting in place, each pipe must be thoroughly cleaned and freed of all dirt.

Section 6.4 The surplus jointing material and earth which may bind entrance into the pipe in making the joint shall be removed by a suitable scraper, followed in pipes of twelve (12) inches or under in diameter, by a firm and stiff swab, filling the entire bore of the pipe and drawn forward as the work progresses.

Section 6.5 The swab shall be removed at short intervals to be properly cleaned and permit the removal of any foreign matter that may have accumulated. When pipe laying is completed, the swab shall be removed. Suitable filling for swab shall always be kept on the work.

Section 6.6 When the size of the pipe permits, the inside of the joint shall be pointed with a suitable trowel.

Section 6.7 The smoothness of the interior joint shall be determined by some suitable device, and no pipe shall be finally set until the inverts coincide. Maximum size spigots permitted by ASTM Specifications shall not be joined with the minimum size sockets permitted.

Section 6.8 Wyes and tees will be inserted or proper opening provided in the sewer lines wherever the Wastewater Superintendent may direct. All branches thus inserted, unless connected with a service lateral, shall be closed by plugs provided by the pipe manufacturer.

Section 6.9 After the cover is in place in any wye or tee, it shall be completely sealed with jointing compound so as to be watertight. All pipe for laterals shall be marked using metalized tape buried between 18 and 24 inches. The pipe trench shall be backfilled to approximately 24 inches below the ground surface and then the metalized tape shall be placed flat over the top of the pipe.

Section 6.10 In sewers over eight (8) feet in depth, or whenever the Wastewater Superintendent may direct, stacks shall be carried up from the tee or wye connections at an angle of forty-five (45) degrees with the vertical and the end shall terminate a minimum of four (4) feet below the ground surface. Where laterals are called for on the plans, or directed by the Wastewater Superintendent, they shall be laid to one foot beyond the existing property line. The ends of the stacks or laterals shall be closed with covers as specified for wye branches. A metal strip shall be placed as for wyes and tees.

Section 6.11 Whenever pipe laying is stopped for the night or for any other cause, the end of the pipe shall be securely closed with stopper to prevent the entrance of water, mud or other obstructing matter, and shall be secured in such a manner as to prevent the end pipe from being dislodged by sliding or other movement of the backfilling.

Section 6.12 Ponding water in open trenches shall be pumped, bailed or otherwise removed. The pipe shall be kept clear of water during the removal process.

Section 6.13 Where pipe is laid under railroad tracks which are in service and cannot be removed for this reason, the construction shall be handled in a manner completely satisfactory to the proper authoritative railroad officials. Methods agreed upon with such officials shall also meet the approval of the Wastewater Superintendent prior to performance of such work. Pipe laid under the railroad tracks shall meet the same requirements in construction as to line and grade, character of joints, and other characteristics as the remainder of the system.

Section 6.14 Wherever service laterals are intercepted by the excavation for the new sewer, connection shall be maintained temporarily to the old sewer until the particular section of the new sewer is completed and tested to the satisfaction of the Wastewater Superintendent, then the service lateral shall be broken and reconnected to the new sewer through a wye, tee or opening which would have been placed in the sewer for that purpose.

Section 6.15 The dead end of the service lateral shall be capped as close as is practical to the side of the excavation from which it emerges. If considered necessary by the Wastewater Superintendent, special concrete support will be designated by the Superintendent.

Section 6.16 After each joint is laid, it shall be partly backfilled and made secure before the joint is poured or made.

Section 6.17 Workmen shall not walk or stand upon the newly laid pipe until the necessary backfill has been placed and tamped to prevent the displacement of the pipe.

Section 6.18 Rubber boots shall be installed at the pipe/manhole connection as well as where two different types of pipe are connected.

Section 7. **BACKFILLING.**

Section 7.1 Before backfilling any trench, the Wastewater Superintendent shall be notified, and a field inspection shall be conducted by the Wastewater Department prior to proceeding with the work.

Section 7.2 No trenches or excavated areas shall be backfilled until all concrete has cured to a suitable degree of hardness. Backfilling shall be performed immediately following concrete curing.

Section 7.3 After the pipe has been installed, selected material from excavation shall be placed along side the pipe in layers not exceeding four (4) inches in depth. Care shall be taken to ensure thorough compaction of the fill under the haunches of the pipe. Each layer shall be thoroughly compacted by hand tamping with iron tampers, the tamping face area of which shall not exceed fifty (50) square inches. This method of filling and compacting shall be continued until the fill has reached a depth of at least two (2) feet above the top of the pipe. All material shall be deposited carefully in the trench to avoid damaging the sewer. The operation of heavy equipment shall be conducted so that no damage to the sewer will result.

Section 7.4 The remainder of the trench above an elevation of two (2) feet higher than the top of pipe shall be backfilled uniformly in layers not exceeding six (6) inches in thickness. Mechanical backfilling will be permitted, providing material being placed with dragline or crane has a free fall of not greater than one (1) foot from the bucket. Each six (6) inch layer shall be completed by mechanical tamping, except as hereinafter permitted.

Section 8. **MANHOLE SPECIFICATIONS.**

Section 8.1 Manholes are used to facilitate the maintenance and operation of sewerage systems. They shall be located at the end of each change in grade, direction, size of sewer, or alignment, at each street intersection, and at distances not greater than 400 feet unless otherwise approved by the City Engineer and the Wastewater Superintendent.

Section 8.2 Every manhole is to be 3000 psi pre-cast concrete, and as each is reached, shall be carried up to the grade as given by the Wastewater Superintendent.

Section 8.3 When required, single lengths of pipe of required size shall be installed to receive either present or future branch lines. Where it is not intended to construct the branch lines at once, the pipe thus inserted must be securely closed in such a manner that future connections can be made without breaking the pipe.

Section 8.4 Where manholes intercept existing laterals connected to existing manholes, the lateral service to the existing manhole shall be kept intact until the next adjacent section of new sewer is completed and approved. The laterals shall be broken and fed to the new sewer and the dead end of the laterals plugged at the manhole wall with a cap.

Section 8.5 Drop manholes shall be avoided; however, where sewers must enter manholes at a point more than 24 inches above the invert of the manhole, drop connections shall be installed. Drop connections shall be 3000 PSI pre-cast concrete, in strict accordance with the details shown on the plans.

Section 9. **PUMP STATION SPECIFICATIONS.**

Section 9.1 The City of Prattville typically encourages the construction of below ground pump stations.

Section 9.2 It is the intent that the entire area within the limits of the pumping station, as shown on the plans, shall be cleared. In general, clearing shall consist of the removal and disposal of all undergrowth, brush, logs, trash, and other debris.

Section 9.3 Trenches or foundations for pipes or structures shall be excavated to the lines, grades, and elevations shown on the approved plans. Trench and structure excavations shall be of sufficient size to permit the placing of pipe and forms.

Section 9.4 If, at any point in excavating for structures, material is excavated beyond the neat lines upon or against which concrete is to be placed, the overcut shall be filled with select backfill properly compacted, or with concrete as directed by the Wastewater Superintendent.

Section 9.5 Should lowering of ground water be necessary for the installation of concrete structures, piping, etc, or to prevent lateral movements of material under concrete already placed, such lowering shall be accomplished by means of a well point system or other approved means. Comprehensive plans for de-watering operations prior to installations shall be prepared.

Section 10. **CONCRETE WORK FOR PUMP STATIONS.**

Section 10.1 All cement used shall conform to the latest ASTM Specifications C-150, Type 1, or ASTM Specifications C-175, Type 1A. Only one brand of Portland Cement shall be used in any one structure.

Section 10.2 In addition to the ASTM requirements for Type I cement, the chemical composition shall include not more than 8.0 percent of tricalcium aluminate. Manufacturer's mill certificates of chemical composition shall be provided to verify this requirement.

Section 10.3 Concrete aggregates shall conform to "Standard Specifications for Concrete Aggregates", ASTM Serial Designation C-33.

Section 10.4 Reinforced steel shall conform to either ASTM Specifications A-15 for intermediate grade billet-steel bars or A-16 for rail-steel bars. Field inspection for section, rust, shape, and dimensions will be required.

Section 10.5 Reinforcement shall be securely tied at intersections with No. 18 black annealed wire and be carried on spacers or chairs of sufficient weight and number to properly support same.

Section 10.6 The reinforcement of footings, and other principal structural members in which the concrete is placed directly against the ground, shall have not less than three (3) inches of concrete between it and the ground contact surface. If concrete surfaces, after removal of forms, are to be exposed to the weather or be in contact with the ground, the reinforcement shall be protected with not less than two (2) inches of concrete for bars larger than No. 5 and 1½ inches for No. 5 bars or smaller.

Section 10.7 The concrete protective covering for reinforcement at surfaces not exposed directly to the ground or weather shall be not less than 1½ inches for beams, girders, and columns.

Section 10.8 Forms shall be No. 2 common (or better) lumber for exposed surfaces, and No. 1 common, dressed matched boards for exposed surfaces.

Section 10.9 Water shall be clean, fresh and free from oil, alkali, acids, vegetable, sewage, organic or other contaminants.

Section 10.10 Form oil shall be a non-staining mineral oil.

Section 10.11 Weatherproof building paper shall meet Federal Specification UU-P-147 Grade A.

Section 10.12 Form lacquer shall be of a type specially prepared for the purpose and shall not stain or injure the concrete.

Section 10.13 All concrete, except for thrust blocks and anchors, shall meet the following requirements:

MAX. WATER PER BAG CEMENT	MIN. CEMENT PER CU. YD.	MIN. COMPRESSIVE STRENGTH AT 28 DAYS	RANGE IN SLUMP
6.0 GALLONS	**6.0 CU.FT.**	**3,000 PSI**	**2" - 5"**

Section 10.14 Water shall be removed from excavation before concrete is deposited. Any water shall be diverted through proper side drains to a sump or be removed by other approved methods which will avoid working freshly deposited concrete.

Section 10.15 Ready mix concrete may be used in lieu of concrete mixed at the job site.

Section 10.16 All mixing shall be done by approved methods and equipment and the Wastewater Superintendent shall have free access to the mixing plant at all times.

Section 10.17 Concrete shall not be transported or used in any case after a period in excess of one hour after the addition of water.

Section 10.18 The organization supplying ready mixed concrete shall have a plant of sufficient capacity and transportation facilities to assure continuous delivery at the rate required.

Section 10.19 Concrete shall be handled from mixer to place of final deposit in a continuous manner, as rapidly as practicable, by methods which will prevent the separation or loss of ingredients.

Section 10.20 Under no circumstances shall concrete that has partly hardened be deposited in the work.

Section 10.21 Care shall be exercised to prevent splashing forms or reinforcement. Any hardened or partially hardened concrete already in place must be removed before the work proceeds.

Section 10.22 Concrete shall not be placed on concrete which has hardened sufficiently to cause formation of seams and planes of weakness within the section.

Section 10.23 Concrete shall not be allowed to drip freely more than 5'0" in unexposed work or 3'0" in exposed work. Where greater drops are required, a tremie or other suitable approved method shall be employed to assist concrete in place.

Section 10.24 Concrete, as soon as deposited, shall be worked into corners and around reinforcements. It shall be deposited in the forms as nearly as practicable in its final position to avoid rehandling. High frequency vibrators shall be used inside the form to properly consolidate the mix at the time of placing. Vibrators of an approved type shall be used and care shall be exercised to prevent any displacement of forms or

reinforcing. The concrete mixture shall be worked into all corners and around all reinforcements and inserts. Tapping or external vibration of forms will not be permitted.

Section 10.25 Satisfactory runways or other means must be provided to convey the concrete to the place of deposit in order not to disturb forms or reinforcement. Runways shall not be blocked up on reinforcement. Running wheelbarrows directly over reinforcement will not be permitted. Concrete shall only be mixed and placed when temperature is at least 40° Fahrenheit and rising. Suitable means shall be provided for maintaining concrete at a temperature of at least 50° Fahrenheit for a period of seven days after placing. The method of heating materials and protecting concrete shall be subject to approval. Salt, chemicals or other foreign materials shall not be mixed with the concrete for the purpose of preventing freezing.

Section 10.26 When concrete is conveyed by chutes, the plant and equipment shall be of such size and design as to ensure a practically continuous flow in the chute. The chute shall be of metal or metal lined except that aluminum shall not be used, and the different portions shall have approximately the same slope. The slope shall not be less than 1 vertical to 3 horizontal and not more than 1 vertical to 2 horizontal, and shall be such as to prevent the segregation of the ingredients of the concrete.

Section 10.27 The discharge end of the chute shall be provided with a baffle plate to prevent segregation. If the height of the discharge end of the chute is more than three (3) times the thickness of the layer being deposited, but not more than five (5) feet above the surface of the concrete in the forms, a spout shall be used, and the lower end maintained as near the surface of deposit as practicable. When the operation is intermittent, the chute shall discharge into the hopper. The chute shall be thoroughly cleaned before and after each run and the debris and any water used shall be discharged outside the forms.

Section 10.28 Exposed surfaces shall be smoothed off and blemishes removed. Top slab shall have steel trowel finish. Unexposed surfaces shall have the rough edges removed and all holes pointed up.

Section 10.29 Imperfect or damaged work or any material damaged before final acceptance, shall be satisfactorily replaced in accordance with the drawings and specifications. Removal and/or replacement of concrete work shall be done in such a manner that strength will not be impaired.

Section 10.30 Inspection of all excavation, forms and reinforcement will be made and shall be approved before concrete is placed, and if found to be unsatisfactory, the work shall not proceed until all defects have been remedied.

Section 11. <u>WET WELL.</u>

Section 11.1 The foundation of the wet well shall consist of a reinforced concrete slab poured on undisturbed earth.

Section 11.2 The barrel of the wet well shall be constructed of sections of reinforced concrete pipe conforming to ASTM Specification Designation C-76, Class III, or equal material. Joints in concrete pipe shall be made with rubber gaskets or flexible plastic gaskets. Pipes penetrating wall of wet well shall be grouted in place using non-shrink grout.

Section 12. **PUMPS FOR PUMP STATIONS.**

Section 12.1 Pumps shall be submersible (Flyght or approved equal), specifically designed for the handling of raw, unscreened, sanitary domestic sewage.

Section 13. **PERFORMANCE OF PUMP STATIONS.**

Section 13.1 Each pump must have the necessary characteristics and be properly selected to perform under the following operating conditions:

Capacity, in G.P.M.
Total dynamic head, in feet
Total dynamic suction lift, in feet
Maximum priming lift, in feet
Minimum TDH, in feet
Maximum TDH, in feet

Section 13.2 Consideration shall be given to the sanitary sewer anticipated, in which occasionally debris will lodge between the pump suction check valve and seat, resulting not only in loss of the suction leg, but also in the siphoning form the pump casing to the approximate center of the impeller. Such occurrence shall be considered normal with proper installation of air release line free to atmosphere. In consideration of such occurrence, and of the unattended operation anticipated, each pump shall be so designed as to retain adequate liquid in the pump casing to insure unattended automatic re-priming while operating at its rated speed in a completely open system without suction check valves and with a dry suction leg.

Section 13.3 Openings and passages of pump shall be large enough to permit the passage of a given sphere diameter and any trash or stringy material which can pass through the average house collection system. Pump volute or casing shall contain no openings, such as recirculating ports, of a lesser diameter than sphere size specified. Screens or any internal devices that create a maintenance nuisance or interfere with performance of the pump shall not be permitted.

Section 13.4 Pump shall also be fitted with a replaceable wear plate. Replacement of the wear plate, impeller, and seal shall be accomplished through the removable cover plate. Entire rotary assembly, which includes bearings, shaft, seal, and impeller, shall be removable as a unit.

Section 14. **PLACING OF PUMPS IN PUMP STATIONS.**

Section 14.1 The placement of pumps shall be performed only by competent mechanics experienced in this type of installation.

Section 15. **PUMP STATION VALVES.**

Section 15.1 Gate valves shall be AWWA current standard, iron body, full bronze mounted, double disc, parallel seat, designated for a working pressure of 150 psi, furnished with a two (2) inch operating nut. All valves shall open to the left. Valves shall be of non-rising stem type with "O" ring seals, and, unless otherwise shown on the plans, shall be furnished with mechanical joints.

Section 15.2 Check valves (larger than 2½") shall be iron body brass trimmed, outside lever and weight, swing check valve, for 150 psi working pressure. The valve shall be designed so that the disc cannot lock in the open position on reversal of flow.

Section 15.3 Construction and materials shall be such that the valves shall be suitable for service on raw sewage. Valves shall be flanged and drilled to 125 pound American Standard. Unless otherwise indicated on the plans, the valves shall be for horizontal mounting with weight and lever to assist valve closing.

Section 15.4 Cast iron valve boxes shall consist of a base covering the operating nut and head of the valve, a vertical shaft at least 5½" inches in diameter, and a top section extending to a point even with the finished ground surface, provided with a cast iron cover marked "sewer" and centered over the operating nut.

Section 16. **CAST IRON AND DUCTILE IRON PIPE FOR PUMP STATIONS.**

Section 16.1 Cast iron and ductile iron pipe shall conform to the detailed criteria described in the specifications.

Section 16.2 If it is necessary to cut ductile iron pipe, in no case shall it be cut by burning, but shall be cut by saw, cutter, abrasion or other approved means.

Section 16.3 The pressure rating, metal thickness, net weight of pipe, without lining, length of pipe, name of manufacturer, and letters "DI" or "CI" shall be clearly marked on each length of pipe.

Section 16.4 All pipe fittings, valves, and other accessories shall be unloaded at the point of delivery, hauled to and distributed at the site of the project. They shall at all times be handled with care to avoid damage. In loading and unloading, pipe shall be lifted by hoists and slid or rolled on skidways in such manner as to avoid shock. Under no circumstances shall pipe, fittings, or valves be dropped. Pipe handled on skidways must be skidded or rolled against pipe already on the ground.

Section 16.5 Taps shall be made in pipe or fittings where designated, or as devices require as indicated on the plans. Unless otherwise indicated or directed, all taps shall be plugged water tight with approved plugs for the type pipe used. Taps shall be provided for testing as required.

Section 17. **DRESSER STYLE COUPLINGS**

Section 17.1 Couplings indicated on the plans as "Dresser Style Couplings" shall be of the flexible compression sleeve type as described in AWWA Manual M11 for use with plain and cast iron or steel pipe of the size shown on the plans with an operating pressure equal to the line in which installed.

Section 18. **ELECTRICAL**

Section 18.1 All electrical material and equipment shall be new and free of defects. The entire electrical installation shall be not less than that required by the latest edition of the National Electrical Code, the National Electrical Safety Code, and all local electrical codes.

Section 18.2 Electrical material and equipment shall be designed in accordance with the latest requirements of applicable standards such as NEMA, ANSI, IEEE, and shall be approved by the Underwriters Laboratories, Inc. Electrical items shall be standard catalogued products of concerns regularly engaged in the manufacture of such products, unless otherwise noted.

Section 18.3 All electrical work shall be carried out by skilled workers regularly engaged in the performance of such duties.

Section 18.4 The basic power requirement for the project shall be as shown on the approved plans.

Section 18.5 Non-current carrying metal parts of electrical items such as cabinets, enclosures, frames, etc., and the neutral conductor shall be grounded in accordance with the National Electrical Code unless additional grounding requirements are indicated. Special grounding system features shall be provided as indicated on the approved plans.

Section 18.6 Steel conduit shall be provided unless otherwise indicated. Fittings for rigid steel conduit shall be threaded types.

Section 18.7 Nonmetallic conduit shall be provided where indicated on the plans. Fittings shall be manufactured from same type material as the conduit and shall be installed with cement as recommended by the manufacturer.

Section 18.8 Aluminum conduit shall not be provided unless specifically noted as such on the approved plans.

Section 18.9 All conduit shall be clean and free from dents, scars or other deformities. All connections shall be watertight.

Section 18.10 Changes in directions shall be made with symmetrical bends or conduit boxes. Field made bends shall be made with an approved hickey or conduit bending apparatus. Conduit runs shall be installed parallel or perpendicular to structural members.

Section 18.11 Conduit hangers and supports shall be provided at intervals recommended by the manufacturer and the National Electrical Code. Underground conduit runs shall be installed at a minimum depth of eighteen (18) inches or as indicated on the plans. Soil used for backfill shall be free from objectionable materials such as rocks, glass, metal, wood, etc., and shall be placed and tamped in six (6) inch layers.

Section 18.12 Conduit breakers shall have trip-free type operating handles. Trip current ratings shall be permanently molded into the frame or handle.

Section 19. **MOTORS.**

Section 19.1 Pump motors shall be horizontal, open drip-proof, cast iron frame, induction type, with normal starting torque and low starting current characteristics, suitable for specified hertz, volts, and electric current. Motors shall not be overloaded at design pump operating conditions or at any head in pump operating range as specified.

Section 19.2 Each motor shall be of cast iron frame construction and shall be of current NEMA design. Rolled steel or aluminum frame motors shall not be acceptable.

Section 20. **CONTROLS FOR PUMP STATIONS.**

Section 20.1 The control panel shall consist of a circuit breaker and magnetic starter for each pump motor actuated by an air bubbler type liquid level control system with all components mounted in one common enclosure. The control assembly shall provide means to operate each pump manually or automatically. When operated in the automatic mode, the control assembly shall provide means to manually select or automatically alternate the position of the "lead" and "lag" pumps after each pumping cycle.

Section 20.2 Control compartment shall incorporate a removable back panel on which control components shall be mounted. The back panel shall be secured to the enclosure with collar studs.

Section 20.3 An air bubbler type liquid level control system shall continuously monitor wet well liquid level and control operation of the pumps according to level variations. The system shall actuate pump motors on an alternating "lead-lag" basis, with independently adjustable lead pump and lag pump start levels. One pump motor shall be actuated when wet well liquid rises to pre-set "lead pump start" level, and shall be shut down when wet well liquid has been pumped down to the pre-set "stop" level. If, after the lead pump motor has been actuated, wet well liquid continues to rise and reaches the pre-set "lag pump start" level, second pump motor shall be actuated and both pump motors shall continue to operate in parallel until wet well liquid falls to pre-set "stop" level.

Section 20.4 All motors, branch circuit breakers, motor starters, and control relays shall be of highest industrial quality, securely fastened to the removable back panel with screws and lock washers. The back panel shall be tapped to accept all mounting screws. Self-tapping screws shall not be used to mount any component.

Section 20.5 A thermal-magnetic air circuit breaker shall be furnished for each pump motor. All circuit breakers shall be sealed by the manufacturer after calibration to prevent tampering. Each circuit breaker shall be adequately sized to meet the pump motor operating conditions.

Section 20.6 A mechanical disconnect mechanism shall be installed on each circuit breaker to provide a means of disconnecting power to the pump motors. The operator handles for the disconnect mechanisms shall be located on the exterior of the control compartment door, with interlocks which permit the door to be opened only when circuit breakers are in the "OFF" position.

Section 20.7 An open frame, across-the-line, NEMA rated, magnetic motor starter shall be furnished for each pump motor. All motor starters shall be equipped to provide under-voltage release and overload protection on all three phases. The motor starter contacts shall be easily replaceable without removing the motor starter from its mounted position. Overload reset pushbuttons shall be located in the exterior of the control compartment door.

Section 20.8 Two (2) vibrating air pumps shall be furnished and wired in such a manner that one air pump shall operate continuously to deliver free air at a specified rate. Each air pump discharge line shall be equipped with a valve and each air pump shall be wired in such a manner as to allow either air pump to be removed for service while the other remains in operation.

Section 20.9 Liquid level control systems utilizing air compressors delivering greater quantities of air at higher pressures requiring pressure reducing valves, rate of flow control valves and air storage reservoirs shall not be acceptable.

Section 20.10 A manually operated switch shall be furnished to alternate the use of the air pumps. An air bell shall be supplied for installation in the wet well, and a condensate trap shall be installed in air line in the control panel.

Section 20.11 All operating controls and instruments shall be securely mounted on the control compartment door. All controls and instruments shall be clearly labeled to indicate their function.

Section 20.12 Switches shall be furnished to alternate air pumps, disconnect control circuit, select sequence of pump operation, and select mode of operation for each pump. All switches shall be oil-tight construction.

Section 20.13 Pump mode selector switches shall be hand-off-auto type to permit manual control of either pump motor. Operation of pumps in manual mode shall bypass all safety shutdown circuits except pump motor overload relays.

Section 20.14 Indicator lamps shall be mounted in oil-tight modules. Lamps shall be easily replaceable from the front of the control compartment door without removing lamp module from its mounted position.

Section 21. ALARM SYSTEM FOR PUMP STATIONS.

Section 21.1 All pump stations shall be equipped with an alarm system as specified.

Section 22. PAINTING AND TOUCH-UP OF PUMP STATIONS.

Section 22.1 All electrical equipment, cabinets, and items that require protective painting shall be painted in accordance with the item manufacturer's standards, except that this shall not be less than a three (3) coat system suitable for the exposure intended. After installation, items shall be thoroughly cleaned of grease, dirt, rust and foreign matter and repainted or touched-up as required with the same color paint applied at the factory.

Section 22.2 Galvanized surfaces installed in exterior or unfinished interior areas, and surfaces with special treatment not requiring painting shall not be painted unless otherwise noted.

Section 23. BACKFILL FOR PIPES AND STRUCTURES.

Section 23.1 Backfill over, under, and around pipes and structures shall be of selected material placed and tamped and compacted in manner and by methods that will avoid unbalanced loading, and that will not cause movement or undue strain on any pipe or structure. The fill placed against or immediately adjacent to pipes or structures shall be built in horizontal layers not exceeding six (6) inches loose and must be compacted by approved mechanical tampers. The density of each layer of material composing the backfill shall be not less than ninety-five (95) percent of the relative maximum density. Each layer of backfill material which does not contain sufficient moisture to compact thoroughly shall be sprinkled and mixed with water as directed. Material containing excess moisture shall be permitted to dry out to proper consistency before compacting is attempted. No muck or unsuitable material shall be used in the backfill.

Section 23.2 In the event that existing material from the excavation is not sufficient to bring the pumping station site to the lines and grades shown on the drawings, additional select material shall be utilized. The select material shall be granular soil containing not more than 15 percent passing the 200 mesh sieve, except that the top four (4) inches shall be topsoil as hereinafter specified.

Section 23.3 Excess material, after backfilling, shall be removed and disposed of.

Section 24. DISTURBED AREAS.

Section 24.1 All areas that are disturbed due to direct or indirect construction operations shall be restored to a condition equal to or better than the condition of the area prior to the operations.

Section 25. CLEAN-UP AFTER CONSTRUCTION.

Section 25.1 After final operation test, the interior and exterior of the station shall be cleared of all trash and debris and left in final operating condition. Final grading of the site and

restoration of surfaces with grass shall be in strict accordance with the applicable plans.

Section 26. FORCE MAINS.

Section 26.1 Force mains shall be of ductile iron pipe and shall be constructed to the alignment and depth required and only so far in advance of pipe laying as the Engineer shall permit. Force mains shall have at least thirty (30) inches cover. Trenches shall be braced and drained so that workmen may work safely therein. The widths of the trench shall be at least one (1) foot greater than the normal diameter of the pipe and the maximum clear width of the trench shall be not more than two (2) feet greater than the pipe diameter.

Section 27. PIPE FOUNDATIONS FOR FORCE MAINS.

Section 27.1 The trench shall have a flat bottom with bell holes of ample dimensions to allow jointing and so that the barrel of the pipe will have a bearing for its full width.

Section 28. PIPE LAYING OF FORCE MAINS.

Section 28.1 All pipe, fittings, etc. shall be lowered into the trench by means of derrick, ropes or other suitable tools, and under no circumstances shall pipe be dropped into the trench. Before lowering and while suspended the pipe shall be inspected for defects and rung with a light hammer to detect cracks. Any defective pipe shall be rejected.

Section 29. JOINTING OF FORCE MAINS.

Section 29.1 Joints shall be installed in strict accordance with the recommendations of the pipe manufacturer.

Section 30. THRUST BLOCKS FOR FORCE MAINS.

Section 30.1 At bends, thrust blocks of concrete of a mix not leaner than 1 cement, 2 sand, and 4 stone, having a compressive strength of not less than 2,000 psi shall be installed. The blocking shall be poured against undisturbed earth.

Section 31. TESTING.

Section 31.1 After the pipe has been laid and partially backfilled, leaving the joints visible where possible, all pipe, or any valved section, shall, unless otherwise specified, be subjected to hydrostatic pressure of 150 psi. The pressure test shall be for at least two (2) hours or until the line has been completely inspected for visible leaks, whichever is longer. Before testing, all air shall be expelled from the line. All necessary taps to expel the air shall be made and then all taps shall be plugged watertight.

Section 31.2 Approved and suitable means shall be provided for determining the quantity for water lost by leakage. No pipe installation will be accepted until or unless the leakage (evaluated on a pressure basis of 4 psi) is less than 25 U. S. Gallons per 24 hours

per mile of pipe per inch nominal diameter of pipe. Any observed leaks shall be repaired whether within the prescribed limits or not.

Section 32. **MANDREL TESTING.**

Section 32.1 A nine-armed mandrel shall be hand pulled through gravity sewer pipe 60 days after backfilling has been completed. The maximum allowable deflection of the pipe shall be not more than 5 percent of the base diameter. Any pipe that deflects in excess of 5 percent shall be corrected and re-laid at the Contractor's expense. All costs related to the mandrel testing and correcting any deficiencies found shall be included in the price bid for the pipe.

Section 33. **MANHOLE VACUUM TESTING.**

Section 33.1 Prior to placing backfill around each manhole, a vacuum test shall be performed to verify the integrity of the pre-cast sections and joints. The testing shall be as provided by NPC Systems, Cherne, or other approved equal. All piping outlets shall first be plugged, and then a vacuum of ten inches of mercury shall be drawn on the manhole. Then the valve shall be closed and the vacuum pump shut off. The time shall then be measured for the vacuum to drop by nine inches of mercury down to 1" H_g vacuum. For manholes 48 inch diameter, not less than 61 seconds shall be considered acceptable. If the nine inch drop occurs in less than 61 seconds, the manhole shall be inspected, repaired and retested until a satisfactory test is obtained and approved by the Engineer. Any changes in the elevation of the top of the manhole that take place during the vacuum test shall be corrected with non shrink grout where the manhole top is in a street.

ARTICLE VII
STORM DRAINAGE SYSTEM

Section 1. EASEMENTS.

Section 1.1 Location: Easements shall be located on rear, front, or side lot lines, as required and to the width specified by their prospective users. Drainage easements shall be as required by the City Engineer.

Section 1.2 Major Drainages: Where a subdivision is traversed by a water course, drainage way, channel or stream or if such a proposed drainage way is shown on an adopted drainage plan, there shall be provided a storm water drainage easement or right-of-way conforming substantially with the lines of such existing or planned drainage way. The width of such drainage easement shall be sufficient to contain the ultimate channel and maintenance way for the tributary area upstream.

Section 1.3 Alignment: Lots and easements shall be arranged in such a manner as to eliminate unnecessary easement jogs or offsets and to facilitate the use of easements for power distribution, telephone service, drainage, water, and sewer services.

Section 1.4 All storm drainage systems shall be installed so that all storm water is led to and confined in natural drainage channels without causing erosion. No storm drainage shall empty into a sanitary sewer.

Section 1.5 If a development lies within the police jurisdiction of the City of Prattville and a public storm water sewer system is reasonably accessible, the developer shall connect with such storm drainage systems and shall do all grading and provide all drainage structures that are necessary to properly carry water to locations which are acceptable to the City of Prattville.

Section 2. GENERAL CRITERIA.

Section 2.1 All storm drainage systems shall be designed in such a way so that the natural drainage patterns of an area are not significantly altered, erosion is not accelerated, accumulation of eroded soil particles in the storm water system is avoided, and the design storm event is accommodated. The criteria for selecting this design storm event shall be as follows:

TYPE OF DRAINAGE SYSTEM	DESIGN STORM RETURN PERIOD
1. SYSTEMS FOR AREAS LESS THAN 40,000 SQ. FT.	10-YEAR STORM FOR CONFINED CONVEYANCE LESS CAPACITY, WITH PROVISIONS MADE TO ROUTE THE 25 YEAR STORM WHEN THE CONVEYANCE CAPACITY IS EXCEEDED.
2. SYSTEMS THAT RECEIVE DRAINAGE FROM BASINS WHOSE TOTAL SIZE IS GREATER THAN 40,000 SQ. FT. BUT LESS THAN 25 ACRES.	25 YEAR STORM FOR CONFINED CONVEYANCE CAPACITY, WITH PROVISIONS MADE TO ROUTE THE 100 YEAR STORM WHEN THE CONVEYANCE CAPACITY IS EXCEEDED.

3. SYSTEMS THAT RECEIVE DRAINAGE FROM BASINS GREATER THAN 25 ACRES.	100 YEAR STORM FOR CONFINED CONVEYANCE CAPACITY.

Section 2.2 No land shall be developed in the police jurisdiction of the City of Prattville without first considering the affects of this design storm event. If, in the opinion of the City Engineer, drainage from the design storm event will adversely affect the proposed development, confined conveyance of the drainage will be required. If it is determined that this drainage should be conveyed by pipe 42 inches in diameter or less, then an underground structure will be required to transport this flow. For greater flows, properly designed open flumed ditches may be used at the option of the City's Engineer. However, an underground structure will be required on buildable lots, between road rights-of-way and the building line. Drainage parallel to an uncurbed roadway, and drainage that flows through parks or lots greater than one (1) acre may be excepted from this requirement if it can be shown that utilizing a drainage ditch will not adversely affect the development.

Section 2.3 Special consideration shall be given to innovative drainage designs that would not adversely affect the quality of development in a particular area.

Section 2.4 If it is determined that drainage ditches are required to convey the storm drainage and it is necessary that these ditches be constructed at a slope of greater than four (4) percent, then these ditches shall be suitably paved.

Section 2.5 Detention ponds and/or similar structures may be required at the option of the City's Engineer.

Section 2.6 Drainage structures shall be constructed at street intersections or where changes in vertical or horizontal alignment occur. The maximum length of storm sewer pipe between such structures shall be four hundred (400) feet unless otherwise directed by the City Engineer.

Section 3. CURB AND GUTTER REQUIREMENTS

Section 3.1 Curb and gutters shall be required for all streets except those on which no lot is less than one and one-half (1½) acre in size, and no lot dimension fronting on a street is less than one hundred fifty (150) feet. Curb and gutter may still be required if, in the opinion of the City Engineer, they are required for proper drainage.

Section 3.2 Curb and Gutters Required. Curb and gutters shall be required along the edges of all street pavements and shall be formed to the cross-section shown on the plans. Whenever practical, the curbs shall be constructed integrally with the pavement using slipform or extrusion equipment, or placed immediately after finishing operations by hand forming or using face forms.

Section 3.3 Curbs. Curbs shall be constructed of Portland Cement Airentrained Concrete, Class B, having a standard strength of three thousand (3,000) pounds per square inch. If it is not feasible to install curb and gutter, the Engineer may require a header curb or valley curb to be installed at the pavement edge.

See Illustration No. 4 and Illustration No. 5, Appendix

Section 4. PIPE CONSTRUCTION SPECIFICATIONS

Section 4.1 All concrete and vitrified clay pipe to be installed as storm sewers, except existing pipe required to be removed and re-laid, shall be unused pipe conforming with the following specifications and latest revisions:

Concrete Sewer, Storm Drain and Culvert Pipe	ASTM Des.C-14-68
Reinforced Concrete Culvert Pipe	ASTM Des.C-76-69
Extra Strength Vitrified Clay Pipe	ASTM Des.C-200-69

Section 4.2 Trenches shall be as narrow as practicable, at the same time providing on each side of the pipe, space necessary for thoroughly tamping the bedding material under and around the pipe.

Section 4.3 The bottom of the trench on which the pipe is to be laid shall be free from projecting stones, roots or any inequalities, and shall be brought to a true grade and so shaped as to conform to the contour of the bottom of the pipe for at least one fourth (1/4) of its circumference to provide a firm, uniform bearing for the entire laying length of the pipe. Recesses shall be formed in the trench to receive the bells of the pipe, or to provide ample space for making joints for tongue and groove pipe.

Section 4.4 If, in the opinion of the City Engineer, the material at the bottom of the trench excavation is of such character as to result in unequal settlement of the pipe after backfilling, the trench shall be excavated below grade to the depth directed by the Engineer and backfilled with gravel or select material and thoroughly tamped to insure a stable foundation. Gravel shall conform to the specifications for concrete aggregate and select material shall be pit run sand-gravel or clay-gravel, approved by the City Engineer.

Section 4.5 If rock is encountered in excavating the trenches, it shall be removed to a depth of at least six (6) inches below grade and the trench brought to grade by refilling with suitable material thoroughly tamped to the contour of the bottom of the pipe as above directed.

Section 4.6 Sheeting, bracing, wales, etc. are required as may be necessary to properly support the sides of trench excavations and to prevent any movement thereof which may in any way injure the pipe, diminish the width of the excavation, or otherwise injure or delay the work or endanger adjacent pavement or other structures. Care shall be used to prevent voids outside the sheeting, but if voids occur they shall be immediately filled with suitable material which shall be rammed to the satisfaction of the City's Engineer.

Section 4.7 Upon written order of the Engineer, sheeting or bracing may be left in place to be embedded by the backfilling of the trench. The sheeting so left in place shall be cut off at the elevation directed which shall, in no case, be less than three (3) feet below

the finished grade of the street, or, in the absence of any street grade, from the surface of the ground.

Section 4.8 All sheeting and bracing, not ordered left in place, shall be removed in such manner as will not endanger the constructed sewer, or other public or private structures, or utilities. All voids left or caused by the withdrawal of sheeting shall be immediately refilled and compacted by ramming tools adapted for the purpose, by puddling or otherwise, as directed.

Section 4.9 When it is necessary that sheeting be driven to a depth of two feet or more below the invert elevation of the pipe for this protection of the bottom portion of the trench, the sheeting shall be cut off at the level of the top of the pipe, leaving the lower portion in place.

Section 4.10 Pumping shall be conducted as may be necessary to permit the construction to proceed in an expeditious and workmanlike manner. The disposal of the water removed and excavations shall be constructed in such manner as not to cause any nuisance or any injury to public health or public or private property or to any portion of the work completed or in progress, or to the surface of the streets or any impediment to the use of the streets by the public.

Section 4.11 In no case is water to be allowed to run over the foundation, the invert, or through the pipe until the pipe joints have hardened to the satisfaction of the Engineer. All sewers shall be laid to lines and grades shown on plans or designated by the Engineer or City Engineer.

Section 4.12 No section of pipe shall be laid which has not been inspected by the City Engineer, or his authorized representative, after it has been placed alongside the right-of-way, or line of sewer. Lowering pipe into trenches shall be done with ropes or such other proper facilities as will prevent damage to the pipe during handling. Dropping pipe into place, or rolling, except controlled rolling on plank in the case of shallow trenches, will not be permitted. The pipe shall be laid starting at the down-stream end with the hub or receiving end of the adjacent section with the spigot end hard against the shoulder of the bell. Each section shall be carefully bedded in place in close contact with the adjoining section with the invert true to line and grade.

Section 4.13 No jointing of pipe on the bank or out of position as to line and grade will be permitted without prior written approval of the City Engineer.

Section 4.14 Not later than 24 hours prior to joining bell and spigot pipe, the ends to be joined shall be coated with a prime in accordance with the instructions of the manufacturers of the joint material. The prime shall be placed only on clean, dry surfaces.

Section 4.15 When pipes are to be joined a gasket of closely twisted, long fiber hemp of oakum, of suitable diameter and of sufficient length to shape around the pipe and lap at the top, shall be placed on the spigot end of the pipe being laid and this pipe shall be pushed home into the bell of the adjacent pipe. The gasket shall then be thoroughly caulked to the back of the bell with a suitable caulking tool. A runner shall be placed around the pipe to close the socket opening. The joint compound shall then be

placed in accordance with the manufacturer's recommendations in such a manner that the annular space will be completely filled.

Section 4.16 Joint material shall be "G.K.Compound", "Jointite", or approved equal. Handling and preparation of the joint material shall be in accordance with the manufacturer's recommendations.

Section 4.17 Tongue and groove pipe joints shall be constructed using a stiff mortar composed of one part Portland cement and not more than two parts clean, sharp sand. The mortar shall be used within thirty minutes from the time that the ingredients are mixed with water.

Section 4.18 The first pipe shall be bedded carefully to the established grade line with the groove upstream. A shallow excavation shall be made underneath the pipe at the joint and filled with mortar to provide a bed for the second pipe. The grooved end of the first pipe shall be carefully cleaned with a wet brush, and a layer of soft mortar applied to the lower half of the groove. The tongue of the second pipe shall be cleaned carefully with a wet brush, and while in a horizontal position, a layer of soft mortar shall be applied to the upper half of the tongue. The tongue end of the second pipe shall then be inserted in the groove end of the first pipe, until mortar is squeezed out on the interior and exterior surfaces. Sufficient mortar shall be used to completely fill the joint and to form a bead on the outside. The interior surface of the pipe at the joint shall then be brushed smooth. The mortar on the outside shall immediately be protected from the air and sun with a cover of wetted burlap or earth, and shall be kept protected until the mortar is satisfactorily cured.

Section 4.19 Tongue and groove pipe joints may be constructed by use of "diaper bands" in lieu of above specified method, providing method of installation is approved by the City's Engineer.

Section 4.20 All backfilling material shall be carefully selected to insure that it is free from roots, rock or other unsuitable material and shall have a moisture content which will facilitate compaction.

Section 4.21 Special care shall be used in backfilling around the pipe and a distance of two (2) feet above its top surface. The material shall be deposited in uniform layers not to exceed four (4) inches in thickness, solidly tamped and rammed with proper tools to insure thorough compaction and at the same time avoid injury to or disturbance of the pipe.

Section 4.22 Where backfilling is done within the limits of roads, streets, alleys or other thoroughfares, the backfill, except as specified above, shall be placed in layers of not more than six (6) inches and each layer thoroughly compacted with mechanical rammers or by hand tamping with heavy tampers, the tamping face of which shall not exceed 25 square inches. Except for that part of the trench below a line two (2) feet above the top of the pipe, backfilling done outside the limits of public thoroughfares may be placed in twelve (12) inch layers, and tamped or this portion of the backfill may be flooded.

Section 5. **CONSTRUCTION SPECIFICATIONS FOR MANHOLES, INLETS, JUNCTION BOXES, WINGWALLS, SPILLWAY CONCRETE, HEADWALLS AND SPECIAL STRUCTURES.**

Section 5.1 The materials and method of construction of the concrete portion or portions of manholes, inlets, junction boxes, wingwalls, spillway concrete, headwalls, and other similar structures, shall conform to the applicable portions of this manual.

Section 5.2 If the construction of a portion or portions of manholes, inlets, junction boxes, headwalls and other similar structures requires less than the equivalent of one carload of brick, such brick shall be supplied from a source approved by the Engineer and shall be hard burned and free from imperfections.

Section 5.3 However, if the work requires the equivalent of a carload of more, such brick shall conform to the requirements of ASTM Des. C-32, Grade MA. Developer shall furnish to the Engineer certificates by the manufacturer of the brick evidencing that the brick supplied meets the requirements of these specifications.

Section 5.4 Mortar for brickwork shall consist of one (1) part Portland cement and two (2) parts clean, sharp sand with not more than twenty (20) pounds of hydrated lime added, per sack of cement.

Section 5.5 All courses shall be laid as header courses. Each brick shall have full mortar joints on the bottom and sides which shall be formed in one operation by placing sufficient mortar on the bed and shoving the brick into it. Horizontal joints shall be not exceed three eighths (⅜) of an inch and the vertical joints on the inside shall not exceed one-fourth (¼) of an inch. All brick shall be thoroughly drenched with water immediately before being laid.

Section 5.6 Brick manholes shall have a plaster coat of 1:2 mortar not less than one-half (½) of an inch in thickness on the outside and inside.

Section 5.7 That portion of all manholes, inlets, junction boxes and other similar structures below the center line of the largest pipe or box culvert entering or leaving the particular structure shall have a "streamlined" contact surface. This shall be accomplished by land-placing concrete in a manner as to provide a smooth contact surface, without angular breaks, from upstream conduit or conduits to downstream conduit or conduits.

Section 5.8 Bricks may be used to construct part of the "streamline" fill provided each brick is completely embedded in concrete or a stiff mortar of one part Portland cement and two parts sand, and further provided that no portion of the brick work be closer than one inch from the contact surface.

Section 5.9 All castings shall conform to the latest requirements of ASTM Des. A-48, Class 30.

Section 5.10 Gray iron castings shall be made in accordance with detail drawings furnished and shall be of tough, close-grained iron, true to pattern and free from defects.

Section 5.11 Manhole covers shall be fitted to manhole frames by chipping, grinding or other means, in such manner as to prevent rocking of the cover when an eccentric load is

applied to its top. Any tendency to rattle as determined by test before or after installation will be sufficient cause for rejection of the cover, frame or both.

Section 5.12 All surfaces of castings shall be thoroughly cleaned and given one coat of asphaltum or coal tar pitch varnish before being shipped from the foundry. The varnish shall be of good quality, tough and tenacious when cold, and have no tendency to scale off.

Section 5.13 Grates not required to be fitted into frames shall be given a thick coating of coal tar pitch or grease on the contact surfaces which are to be seated into masonry so as to prevent bonding thereto.

Section 6. REQUIRED CONTRACTOR NOTES.

Section 6.1 The following notes to the Contractor shall be placed on all plans and specifications for surface drainage structures or work drawn for the City of Prattville.

NOTES TO THE CONTRACTOR

A. CONCRETE PEDESTAL SHALL BE POURED IN PLACE. ROUND FORM MAY BE CONSTRUCTED OF METAL, PLASTIC, OR OTHER APPROVED MATERIAL. A 6 INCH DIAMETER PIPE SHELL FILLED WITH CONCRETE WILL NOT BE APPROVED.

B. PIPE MAY CONNECT WITH INLETS FROM ANY DIRECTION, AND AS MANY CONNECTIONS SHALL BE MADE AS NECESSARY.

C. MANHOLE FRAME AND COVER SHALL BE AN APPROVED STANDARD CAST IRON DESIGN.

D. A MINIMUM OF THREE (3) 5/8 INCH STEEL LADDER BARS OF AN APPROVED DESIGN ARE REQUIRED IN ALL INLETS WHERE HEIGHT IS GREATER THAN 4'-0".

E. TWO (2) INCH MINIMUM WEEP HOLES SHALL BE CONSTRUCTED IN INLETS AS DIRECTED BY THE ENGINEER TO FACILITATE SUBGRADE DRAINAGE.

F. INLET DIMENSIONS MUST BE INCREASED TO ACCOMMODATE LARGER PIPE.

G. WHERE DIRECTION OF FLOW IS FROM EACH END OF INLET, SIDE WING (SINGLE WING SHOWN) OPENINGS SHALL BE CONSTRUCTED AT EACH END OF INLET, FOR EACH INLET SO CONSTRUCTED.

H. CONCRETE SHALL BE CLASS A (3000 psi @ 28 DAYS).

I. TWO (2) INCH TEMPORARY DRAIN PIPE TO BE USED DURING STREET CONSTRUCTION. DRAIN PIPE TO BE SEALED AFTER PAVING COMPLETED.

Section 7. CONSTRUCTION SPECIFICATIONS FOR OPEN DITCHES.

Section 7.1 Drainage ditch construction will only be permitted with the approval of and at the direction of the City Engineer.

Section 7.2 If it necessary to stockpile the excavation along the bank or banks of a ditch, it shall be placed so that the top of the slope of the stockpiled dirt will not be less than five (5) feet from the top of the ditch bank and shall have openings as required to permit surface water to drain to the ditch and prevent the ponding of water in back of the stockpiled dirt.

Section 7.3 In those cases where the slope of the ditch is to be greater than four (4) percent, or where otherwise required, the ditch shall be lined with concrete.

Section 7.4 The materials and method of construction of the concrete lining and slope paving for open ditches shall conform to the applicable portions of this manual. Exposed base width portion of concrete lined ditches shall be finished with a steel trowel.

Section 7.5 A dry mix will be permitted for the concrete ditch lining and slope paving; however, the concrete shall have sufficient water to assure proper mixing and bonding of concrete. Forming will not be required, but the concrete shall be thoroughly tamped and consolidated. The bottom of the concrete lined ditches shall be given a trowel finish and the bank slopes of concrete lined ditches and slope paving a sidewalk shall be given a brush finish. Wire mesh shall not be placed on the ground and the concrete poured on top of the mesh. Approximately two (2) inches of concrete shall be placed and the wire mesh then placed on the concrete, after which the final two (2) inches of concrete shall be placed on top of the mesh, or the wire mesh may be supported on small concrete blocks wired to the mesh to hold the mesh in proper position in the slab. Wire mesh shall lap three (3) inches on side joints and six (6) inches on end joints.

Section 7.6 Two horizontal lines of weep holes shall be constructed in all slope paving and concrete lining on ditch banks and the lines shall be located six (6) inches above the flow line of ditch and top of slope paving or bank concrete ditch lining. Weep holes shall be spaced twenty (20) feet on centers and shall be staggered between top and bottom lines.

Section 7.7 Weep holes shall be formed by driving a tapered wooden pin with a minimum diameter of two (2) inches through the concrete and approximately one (1) inch into dirt bank. The wooden pin shall be clean and oiled and shall be placed immediately after the concrete has been screened off and shall be removed after the concrete has set hard enough to permit removal of the pin without damage to the concrete around the weep hole.

Section 8. <u>UPGRADE OF RECEIVING DITCHES OR PIPES.</u>

Section 8.1 Whenever a development will increase flow into an existing drainage structure, the developer shall be required to upgrade the receiving structure as directed by the City Engineer.

ARTICLE VIII
UTILITIES CONNECTIONS AND
UTILITY COMPANY REQUIREMENTS

Section 1. **GENERAL CRITERIA.**

Section 1.1 Every pipe or conduit for water, sewage, gas drainage, communication, or any other use shall be constructed so that it is covered by at least twenty-four (24) inches.

Section 1.2 Each utility should provide the City of Prattville with an up-to-date map of their system within thirty (30) days of written request. This map should indicate the location and depth of each structure along with its relationship to other existing features such as paved areas, structures, and other utility structures.

Section 1.3 Each utility shall provide the City of Prattville with a complete set on construction plans prior to receiving a construction permit.

Section 1.4 Where feasible and appropriate, utility companies shall indicate by means of "surface markings" the locations of their undersurface structures. For instance, curb markings would be considered an excellent method of indicating where a pipe intersected pavement.

Section 2. **PERMITS.**

Section 2.1 No person, except in the case of an emergency, shall make any tunnel, opening, or excavation of any kind in or under the surface at any street maintained by the City of Prattville without first securing a permit from the City for each separate undertaking. In the case of an emergency, this permit shall be applied for on the next regular business day. The permit and application therefor shall be in such form as the City Engineer shall require.

Section 3. **EXCAVATIONS.**

Section 3.1 No opening or excavation in any street shall extend beyond the center line of the street before being backfilled and the surface of the street temporarily restored. Streets will not be completely closed to traffic except when approved by the City Engineer and noted on the permit.

Section 3.2 No more than 250 feet measured longitudinally shall be opened in any street at any one time.

Section 3.3 All utility facilities shall be exposed sufficiently ahead of trench excavation work to avoid damage to those facilities and to permit their relocation, if necessary.

Section 3.4 Pipe drains, pipe culverts, or other facilities encountered shall be protected.

Section 3.5 Monuments of concrete, iron, or other lasting material set for the purpose of locating or preserving the lines of any street or property subdivision, or a precise survey reference point or a permanent survey reference point or a permanent survey bench mark within the City of Prattville shall not be removed or disturbed or caused to be

removed or disturbed unless permission to do so is first obtained in writing from the City Engineer.

Section 3.6 When any earth, gravel, or other excavated material is caused to roll, flow, or wash upon any street, the permittee shall cause the same to be removed from the street within eight (8) hours after the deposit.

Section 3.7 Every permittee shall place around the project such barriers, lights, warning flags and danger signs as shall be determined by the Engineer of Public Works as well as the Alabama Manual of Uniform Traffic Control Devices to be necessary for the protection of the public.

Section 3.8 Access to private driveways shall be provided except during working hours when construction operations prohibit provision of such access. Free access must be provided at all times to fire hydrants.

Section 3.9 Excavated materials shall be laid compactly along the side of the trench and kept trimmed up so as to cause as little inconvenience as possible to public travel. In order to expedite the flow of traffic or to abate a dirt or dust nuisance, bards or bins may be required. If the excavated area is muddy and causes inconvenience to pedestrians, temporary wooden plank walks shall be installed. If the street is not wide enough to hold the excavated material without using part of the adjacent sidewalk, the permittee shall keep a passageway at least one-half the sidewalk width open along such sidewalk line.

Section 3.10 Work shall be performed between the hours of 7:00 AM and 5:00 PM, during day light hours Monday through Friday.

Section 3.11 All pavement cuts, openings, and excavations shall be backfilled and surfaced by the permittee according to City of Prattville specifications.

See Illustration No. 3, Appendix

Section 4. CONSTRUCTION IN THE VICINITY OF EXISTING UTILITIES

Section 4.1 General Criteria. Every effort shall be made to provide any existing maps or information concerning existing utilities to anyone wishing to excavate. However, it remains the contractor's or developer's responsibility to confirm the location of these utilities prior to excavation.

Section 4.2 Every pipe or conduit for water, sewage, gas, drainage, communication or any other use which may be encountered in trenching, shall be carefully protected from injury or displacement and all damage caused to such structures shall be completely repaired.

ARTICLE IX

OFF STREET PARKING: ENTRANCES AND EXITS

Section 1. GENERAL CRITERIA

Section 1.1 The location of and the minimum number of off-street parking spaces shall be as described in the City of Prattville Zone Ordinance. Entrances and exitways shall be as required in the following sections.

Section 1.2 Entrances and exits for all public and private parking areas for commercial, residential, industrial or other use, connected to a public street must be approved by the City Engineer prior to use, and shall have the following characteristics:

a. Driveway turn-outs shall be in substantial accordance with the standard drawings shown below.

b. Driveways entering or exiting to public streets with curb and gutter shall match the existing curb and gutter section.

c. Driveways entering or exiting to public street having open ditch drainage at the point of the driveway, shall be provided with a pipe to allow the free flow of 25 year storm water to flow under the driveway unless the City's Engineer approves an alternate design.

d. Driveways should be located in such a way as to maximize sight distance.

e. Driveways should be located so that they will not be in blind spots of other existing driveways.

f. Driveways shall be located at least thirty feet from any intersection of minor streets and at least forty feet from any intersection involving a major street.

See Illustration No. 4, Appendix

Section 1.3 Parking lots, bays or areas shall be constructed with the following materials, or a porous pavement surface approved by the City Engineer. Surface treatment or gravel shall not be used unless the adjacent street is unpaved. This requirement shall apply to interior travel lanes or driveways. Pavement shall consist of the following:

a. Ninety-five (95) percent compacted base soil.

b. Six (6) inches of ninety-five (95) percent compacted crushed stone.

c. One and one-half (1½) inches of an asphalt wearing surface.

Section 1.4 The minimum slope of a parking lot shall be one (1) percent. The maximum slope shall be ten (10) percent.

Section 1.5 Parking space allocations should be oriented to specific buildings.

Section 1.6 All parking shall be so arranged that cars and trucks may be turned on the lot so that it is not necessary to back into any street.

Section 1.7 The width of all aisles providing direct access to individual parking stalls shall be in accordance with the requirements set forth below.

Section 1.8 The dimensions of all access aisles shall conform with the following requirements:

PARKING ANGLE (DEGREES)	AISLE WIDTH ONE-WAY TRAFFIC	AISLE WIDTH TWO-WAY TRAFFIC
0 PARALLEL PARKING	12	24
30	12	24
45	14	24
60	18	24
90 PERPENDICULAR PARKING	24	24

Section 1.9 A one-way car movement (to the left or counter-clockwise) should be encouraged. A loop drive should be developed around the parking areas.

Section 1.10 Parking areas or lots providing for more than sixty (60) motor vehicle spaces shall, where possible, be subdivided into modular parking bays or lots of not greater than sixty (60) spaces each. 014-9

Section 1.11 Parking lots shall be curbed with permanent and durable curbing to confine cars to striped parking, without overhang or projection onto sidewalks, driveways, bicycle parking areas, planting areas or adjacent landscaped areas. Parking stripes shall be four (4) inches wide and shall be white.

Section 1.12 Parking spaces shall be [illegible] nine (9) feet in width and eighteen (18) [illegible]

Section 1.13 Parking spaces shall be on the same lot or tract of land as the building or use to be served unless the planning board, in connection with site plan review, shall approve collective off-street parking facilities for two (2) or more buildings or uses on adjacent or contiguous lots. The total of such collective off-street parking facilities shall be not less than the sum of facilities required for the individual uses computed separately.

Section 1.14 Sidewalks between parking areas and principal structures, along aisles and driveways and wherever pedestrian traffic shall occur, shall be provided with a minimum width of four (4) feet of passible area and be raised six (6) inches or more above the parking area except when crossing streets or driveways.

Section 1.15 Parked vehicles shall not overhang or extend over sidewalk areas, unless an additional sidewalk width of two and one-half (2½) feet is provided to accommodate such overhang.

Section 1.16 All parking areas shall be lighted to provide a minimum of three (3) footcandles at driveway intersections with main roads and a total average illumination of one-half (1/2) foot candles throughout the parking area.

Section 1.17 Such lighting shall be shielded in such a manner as not to create a hazard or nuisance to the adjoining properties or the traveling public.

Section 1.18 Unobstructed access to and from a street shall be provided. Paved access drives or driveways shall be provided in accordance with the criteria provided in this ordinance. Should exterior curb and gutter not exist, curb and gutter shall be constructed as required by this ordinance.

Section 1.19 In parking lots containing over (10) spaces, the following landscaping standards shall apply:

a. Five (5) percent of the total vehicular use area shall be landscaped as planter islands or peninsulas within the interior of the parking lot;

b. In addition to (a.) above, five (5) percent of the entire lot shall be landscaped with trees or suitable ground cover;

c. A landscaped barrier or other suitable barrier shall separate parking areas within a site from the main entrance and exitways leading to a public street.

Section 1.20 No public or private parking area or access roads thereto shall be constructed, altered or added to until there shall have been filed with the Department of Planning and Development, an application for a building permit, which shall include a plan, drawn to scale, showing the actual dimensions of the lot or lots to be built upon, the exact size and location on the lot or lots of the building or structure and accessory buildings already existing or to be erected, and containing such other information as shall be deemed necessary.

ARTICLE X
STANDARDS AND REQUIREMENTS
FOR ALL DEVELOPMENTS

Section 1.1 GENERAL CRITERIA: The following requirements shall apply to all commercial, housing, mobile home, or other developments requiring review under the City Zoning Ordinance or the City Planning Commission's Subdivision Regulations.

Section 2. DRAINAGE AND INUNDATION.

Section 2.1 Plan required: A drainage plan shall be made for each development by a registered engineer which shall take into account the ultimate or saturated development of the tributary area in which the proposed development is located. Adequate provision shall be made within each development to provide drainage facilities needed within the development taking into account the saturated development of the tributary area. The storm and sanitary sewer plan shall be made prior to other utility plans. Engineering considerations in developments shall give preferential treatment to storm sewer improvements over other utilities and improvements.

Section 2.2 On-site retention: Where development will materially increase downstream flows, on-site retention of water may be required.

Section 2.3 Spill agreements required: Off-premises drainage easements and improvements shall be required to handle the run-off of developments into an appropriate drainage channel as determined by the City Engineer. The developer shall provide the City of Prattville with a Hold-harmless Spill Agreement as required by the City's Engineer.

Section 2.4 Development restricted in flood areas: Low areas below the federally established one hundred (100) year flood level shall not be developed or subdivided unless and until the City Engineer may establish that the area may be developed in accordance with the City's Flood Damage Prevention Ordinance.

Section 2.5 The federally established one hundred year flood plain shall be shown on all plats or maps or other graphic descriptions of building development or subdivision of land submitted to any office of the City of Prattville for acceptance or approval, and the same shall be shown on any map, plat or other graphic description filed or recorded with the Judge of Probate's office.

Section 2.6 Other information required: The City Engineer may require whatever additional engineering information is deemed necessary to make a decision on subdivision and other developments in an area of questionable drainage.

Section 2.7 Conditions of acceptance of water bodies: Lakes, ponds, and similar retention areas will not be accepted for maintenance by the City of Prattville unless said acceptance is approved by the City Engineer.

Section 2.8 Design: Storm sewers shall be designed in accordance with good, accepted engineering practices. Reinforced concrete pipe in accordance with ASTM standards shall be used in all cases. In the case of questionable practices, the opinion of the City Engineer will prevail.

Section 3. **SEWER AND WATER STANDARDS.**

Section 3.1 Developments shall be designed to accommodate public water and sewer if it is available. Water and/or sewer will be considered available if lines of the proper size and flow, with pumping not required, are located within 1200 feet of the property and gravity flow can be established. Installation of all lines shall be the responsibility of the developer. If water and/or sewer is not available, private water supply and sewage disposal may be used subject to the approval of the appropriate County Health Department, and the Alabama Department of Environmental Management.

Section 4. **OTHER UTILITIES:**

Section 4.1 Development shall be designed to accommodate electrical, gas, telephone, and, if available, cable television utilities. The developers shall contact each of these utilities prior to submission of the plans to the City of Prattville in order to obtain necessary standards or other information which will allow service to any project.

Section 5. **CONFLICT WITH PUBLISHED CITY PLANS.**

Section 5.1 Where a proposed park, playground, school, or other public use shown in the community plan is located in whole or in part in a development, the City Engineer shall require that an option to buy such land be extended to the appropriate public agency or body and that such land be reserved from development pending the action of the appropriate public agency or body. Failure of a public body or agency to exercise such option within sixty (60) days of notification shall be deemed non-acceptance.

Section 6. **PRESERVATION OF NATURAL FEATURES.**

Section 6.1 In all developments, due regard shall be given to the preservation of all natural features such as tree cover, natural groves, water courses, scenic points, historic points, and similar community assets which will add attractiveness and value to the property.

Section 6.2 It is recognized that the preservation of existing trees and vegetation, as well as the planting of new trees and vegetation, can significantly add to the quality of the physical environment of the community. The regulations outlined herein are designed to provide for the health, safety, and welfare of the citizens of the City of Prattville.

Section 6.3 Specifically, trees can provide the following benefits to the community:

a. Provide buffers and screens against noise, air pollution, and unsightly and incompatible land uses;

b. Reduce the hazards of flooding and aid the control of erosion and storm water run-off. Trees also assist in the stabilization of soil and replenish ground water supplies;

c. Act to moderate extremes of temperature and provide shade;

d. Absorb carbon dioxide and supply oxygen in our atmosphere, which is an essential ecological function in the preservation of human and animal life;

e. Provide a haven for birds which, in turn, assist in the control of insects;

f. Aid in energy conservation;

g. Are physiologically, psychologically, sociologically, and aesthetically necessary counterpoints to the man-made urban setting.

Section 6.4 The owners or developers of all developments requiring a site plan as defined in Article 1, Section 10 of the "Zoning Ordinance of the City of Prattville" and which are one acre or larger shall submit the following to the City Engineer.

a. A landscaping plan showing the following:

(1) The outline of existing groupings of trees. Physically outstanding or specimen trees within the groups shall also be shown if they are to be removed;

(2) All individual trees with a caliper of five (5) inches or more at a height of two (2) feet above the ground or ornamental trees over twelve (12) feet shall be shown on the plan and labeled as to whether they will be saved or removed.

(3) A plan for proposed new trees and other plant material. A range of species may be shown to allow flexibility during construction. The plan should compensate for the amount and size of trees which have to be removed.

b. A plan for landscaping of parking areas as required by Article IX, Section 1.19.

Section 6.5 The City Engineer may request the review and concurrence of the Prattville Tree Commission prior to approval of said landscaping plan and no building permits shall be issued for any development for which a landscaping plan is required until said plan is approved by the City Engineer.

Section 6.6. Plans meeting the specifications preceding shall be prepared for all City building and parking lot construction and shall be approved by the City Council and the Mayor prior to construction of any building or parking lot.

Section 6.7 Green buffers, wherever required by this or other ordinances or regulations of the City of Prattville, shall meet the specifications of suitable references as approved by the City Engineer.

Section 7. **CHEMICALS USED IN CONSTRUCTION.**

Section 7.1 All chemicals used during project construction or furnished for project operation, whether herbicide, pesticide, disinfectant, polymer, reactant or of other classification,

must show approval of either EPA or USDA. Use of all such chemicals and disposal of residues shall be in strict conformance with manufacturer's instructions.

Section 8. **HANDLING OF MATERIALS.**

Section 8.1 In the event it is necessary to haul soft or wet materials over the streets or pavements of the City, the Developer shall provide suitably tight vehicles, approved by the City's Engineer, to prevent deposits on the streets or pavements. In all cases where any materials are dropped from the vehicles of the Developer, he shall clean-up the same as often as directed and keep the streets clean and free from any dirt or mud, due to his operations.

Section 8.2 The Developer shall at all times provide for the control of dust within residential areas and such other areas where dust is a nuisance to the public by sprinkling with water.

Section 8.3 Any operation, use or any activity involving the manufacture, utilization, or storage of flammable, combustible and/or explosive materials shall be conducted in accordance with the regulations required by the City of Prattville.

Section 8.4 All flammable, explosive and/or combustible material shall be stored in accordance with the Fire Prevention Code of the City of Prattville.

Section 8.5 All outdoor storage facilities for fuel, raw materials and products stored outdoors, shall be enclosed by an approved safety fence and suitable landscaping to screen such areas from public view and shall conform to all storage area requirements imposed by the City of Prattville.

Section 8.6 No materials, wastes or other substance shall be stored or maintained upon a lot in such a manner that natural run-off from such areas on a site with an approved storm water drainage plan can impair the existing water quality of a stream, watercourse or aquifer more than the primary use intended for the lot.

Section 8.7 All materials or wastes which might cause fumes or dust or which constitute a fire hazard or which may be edible or otherwise attractive to rodents or insects shall be stored outdoors only if enclosed in containers which are adequate to eliminate such hazards.

Section 8.8 All sewers, gutters, storm drains, etc. shall be kept clear of trash, mud, or other debris that may result in an obstruction to normal flow.

Section 9. **EROSION CONTROL.**

Section 9.1 Development shall proceed so as not to adversely affect the quality of the land to be developed or properties in the vicinity of the land to be developed.

Section 9.2 Development shall proceed in such a way that erosion is controlled. When feasible, land shall be cleared in stages so that a particular section of land is cleared only as required for its development, with the remainder of the undeveloped land left in its natural state. Where land has been cleared, erosion shall be controlled by such means as grassing, mulching, etc. Silt screens and/or retention basins shall be

constructed to control the erosion run-off unless the City Engineer determines that this is not necessary. Erosion shall be controlled to the extent that erosion both during and after development is not increased over erosion that naturally occurred prior to development.

Section 10. **PROPERTY CONTROL.**

Section 10.1 Adequate provisions shall be made for the flow of sewers, drains and water courses encountered during construction. The lines and structures which may have been disturbed shall be immediately restored to their original condition.

Section 10.2 Trees, grass, fences, signboards, poles, and all other property shall be protected unless their removal is authorized, and any property damage shall be satisfactorily restored.

Section 11. **CLEAN-UP, SITE RESTORATION, AND SITE MAINTENANCE.**

Section 11.1 It shall be the joint responsibility of the owners, contractors and developers to see that project sites shall be kept clean at all times. Loose dirt shall not be allowed to clog ditches or cover sidewalks. Soft clay or other undesirable material removed from the trenches shall be removed from the streets, sidewalks, or ditches.

Section 11.2 All pavement, sidewalks, driveways, curbs, gutters, drains or similar items, removed or damaged during or by construction shall be replaced with construction of first class materials and workmanship. All pavement shall be replaced in accordance with provisions in other sections of this manual.

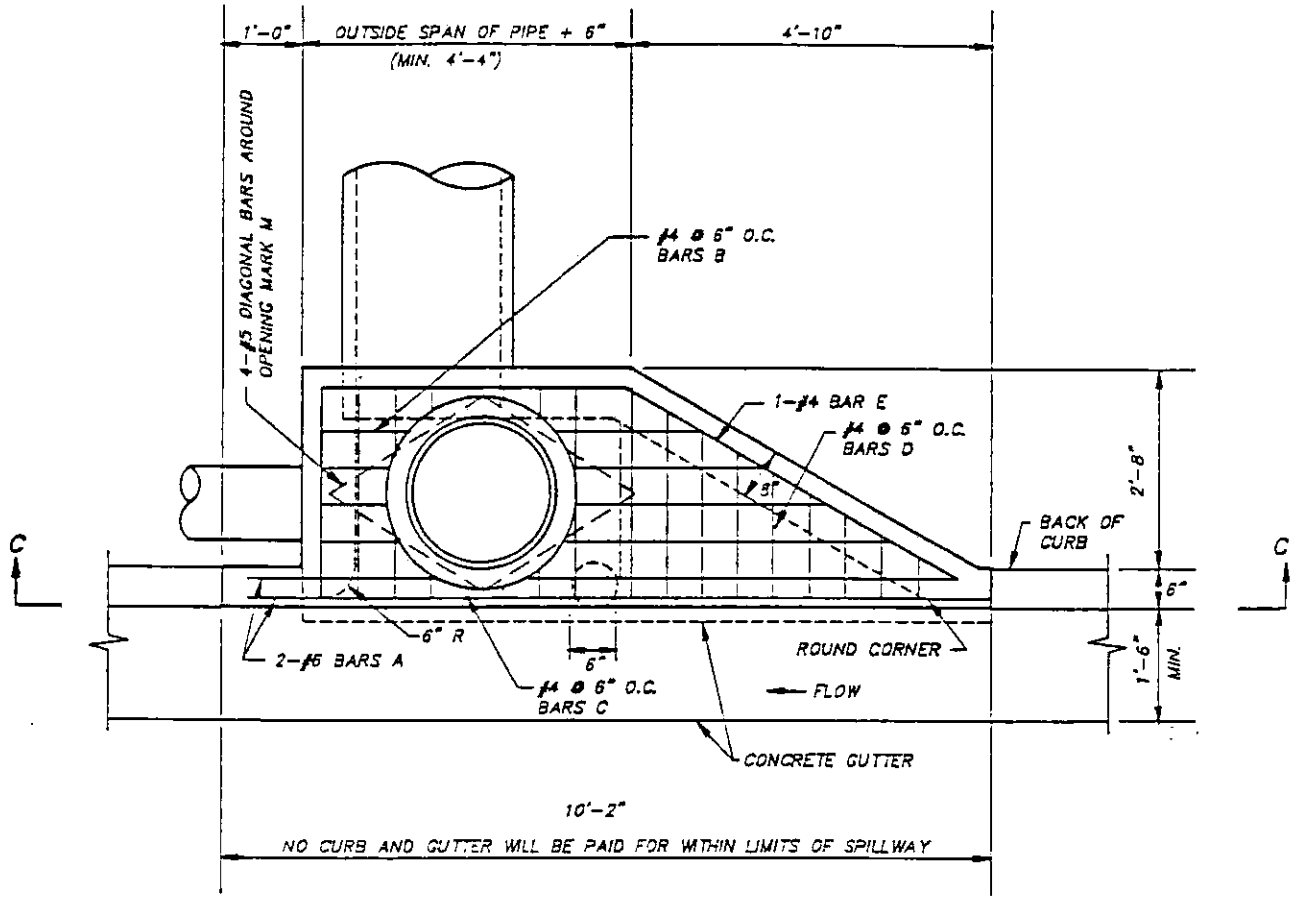
Section 12. **BONDS.**

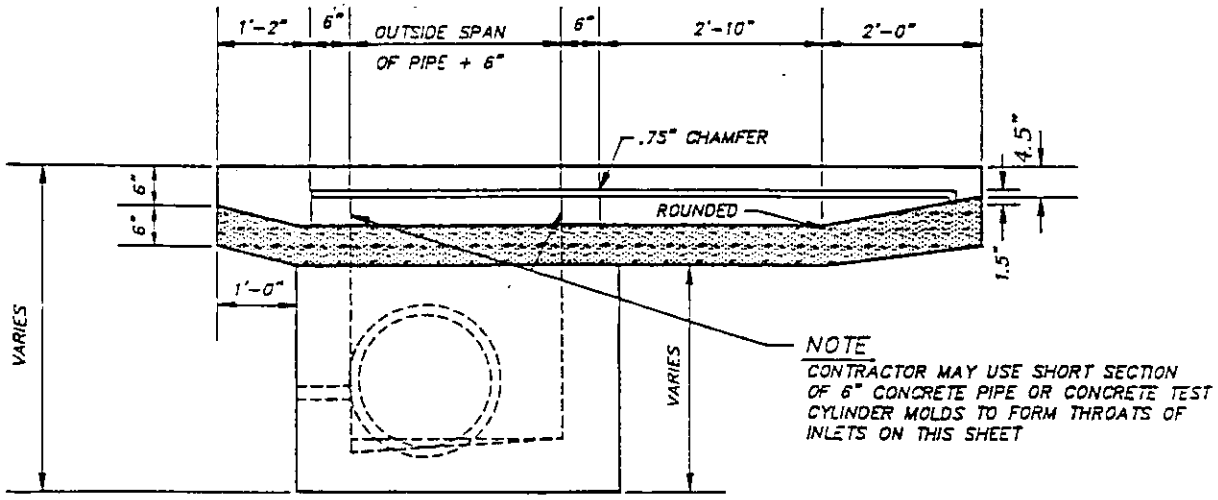
Section 12.1 The workmanship on any public improvements to subdivisions shall be bonded in accordance with the City's Subdivision regulations. For all other types of projects where a developer will offer improvements for public maintenance, the City's Engineer may require a one (1) year bond, not to exceed ten percent of the cost of constructing the improvement, in order to guarantee the quality of construction to the City.

APPENDIX

ILLUSTRATION NO. 1

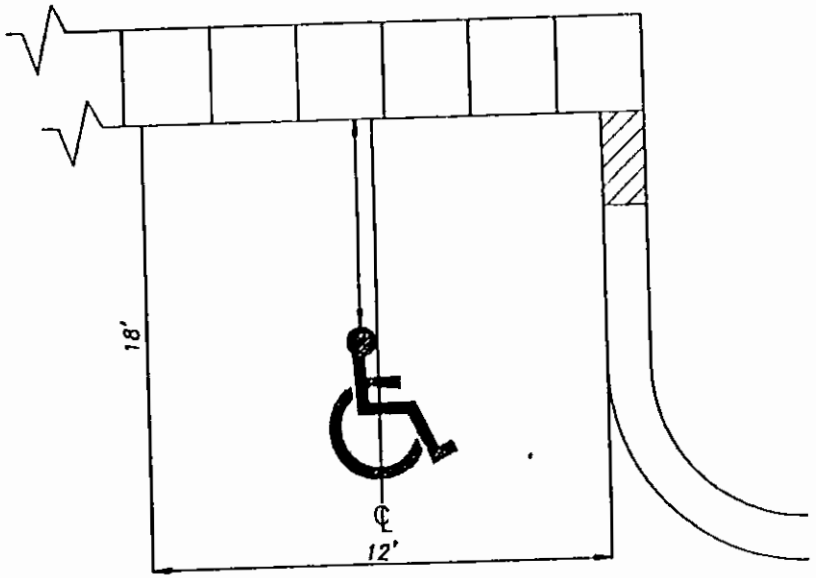
TYPE S INLET DETAILS

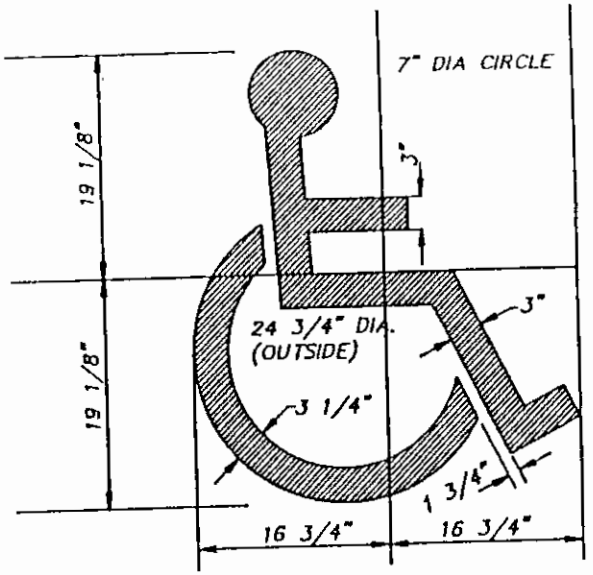




SECTION C-C TYPE A

HANDICAP SYMBOL NOTES:
EACH HANDICAP SPACE SHALL BE MARKED WITH THE UNIVERSAL HANDICAP SYMBOL



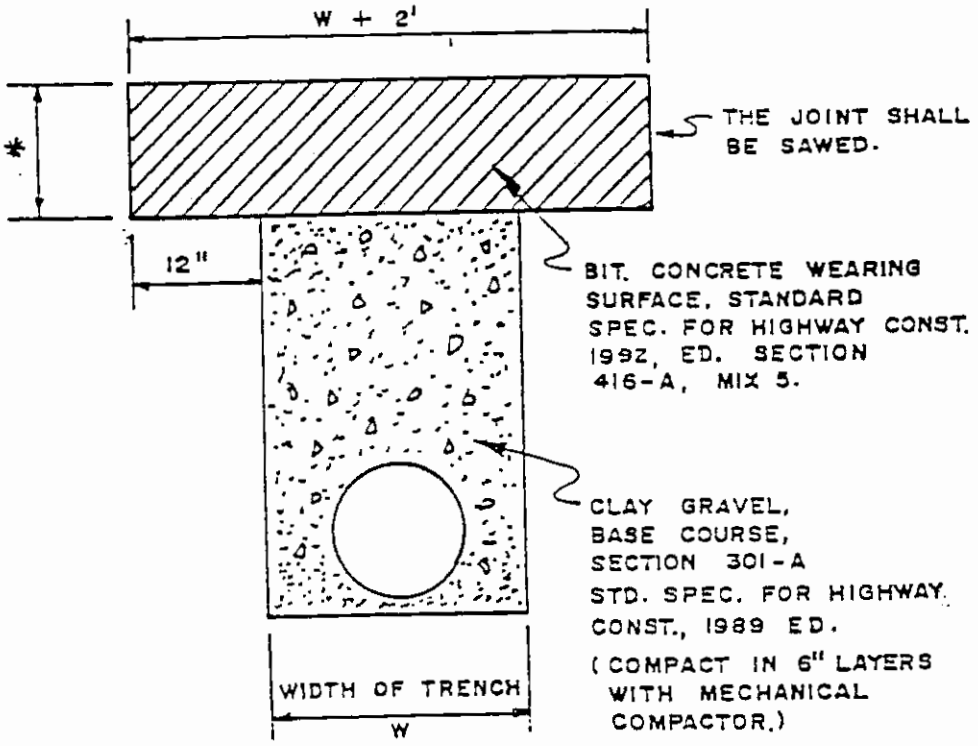


HANDICAP PARKING DETAIL

NOT TO SCALE

ILLUSTRATION NO. 2

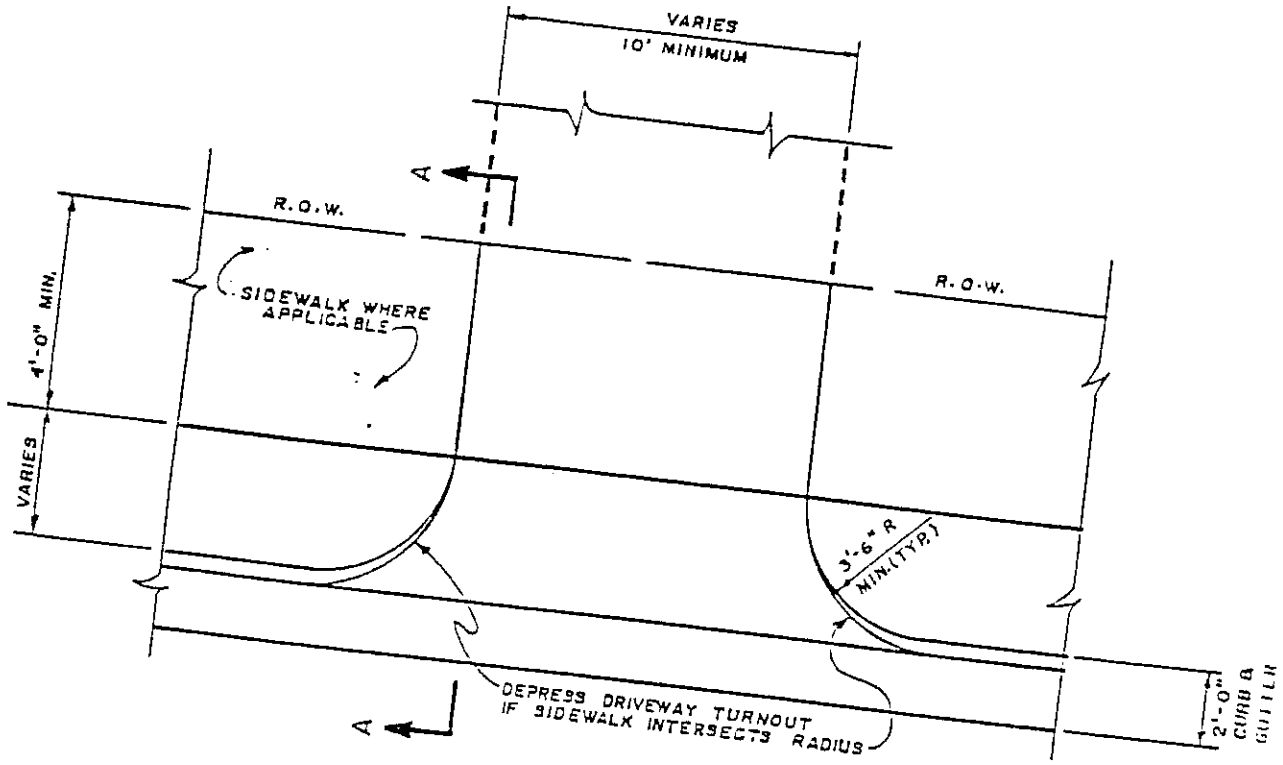
ILLUSTRATION NO. 3



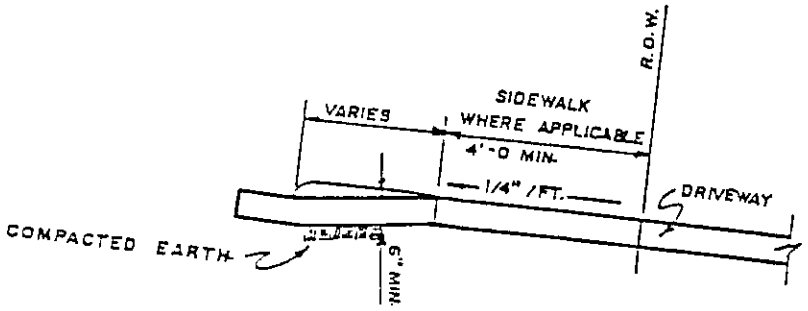
* BIT. CONCRETE WEARING SURFACE - THE DEPTH SHALL MATCH THE DEPTH OF EXISTING PAVEMENT, BUT NOT LESS THAN 6". MIX SHALL BE PLACED AND COMPACTED IN LAYERS NOT GREATER THAN 3".

FLEXIBLE PAVEMENT PATCH

NOT TO SCALE



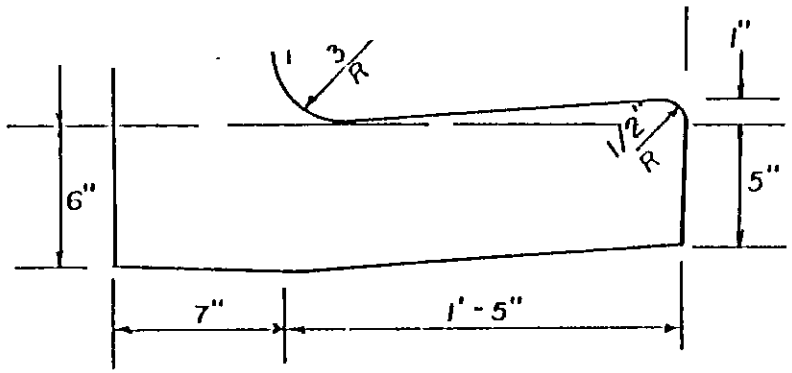
PLAN



SECTION A-A

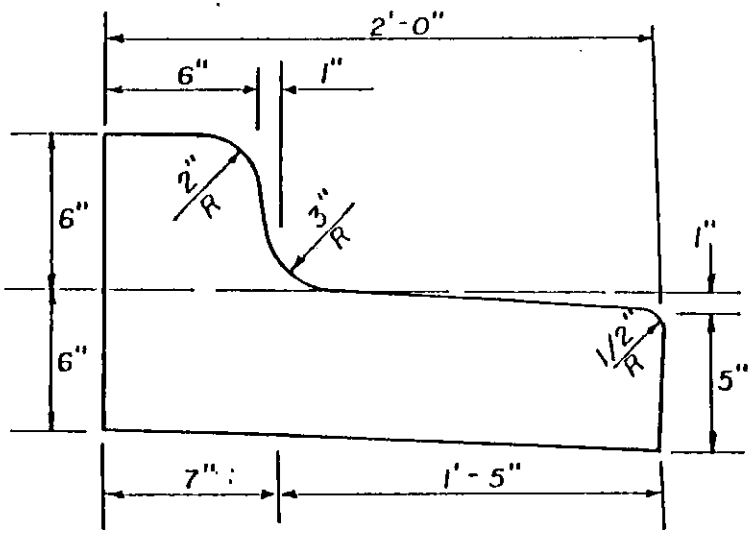
TYPICAL DRIVEWAY TURNOUT

NO SCALE



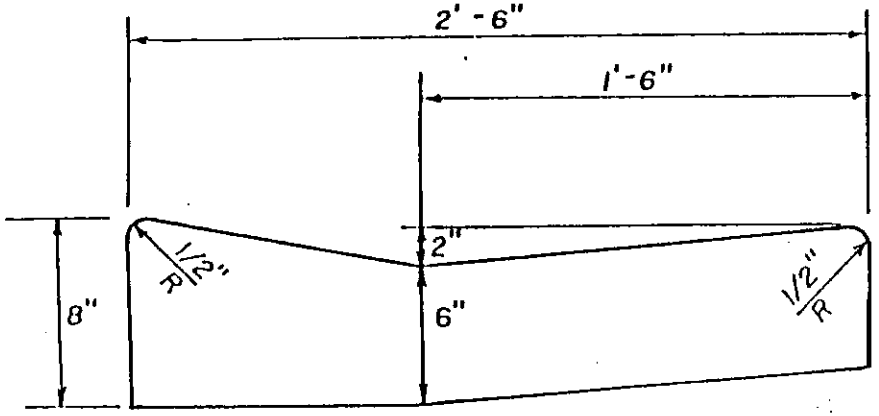
STANDARD CURB & GUTTER

NO SCALE



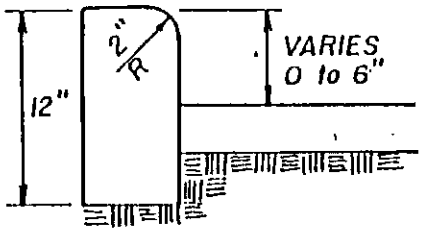
SPILL-OUT CURB & GUTTER

NO SCALE



DRIVE-OVER CURB & GUTTER

NO SCALE

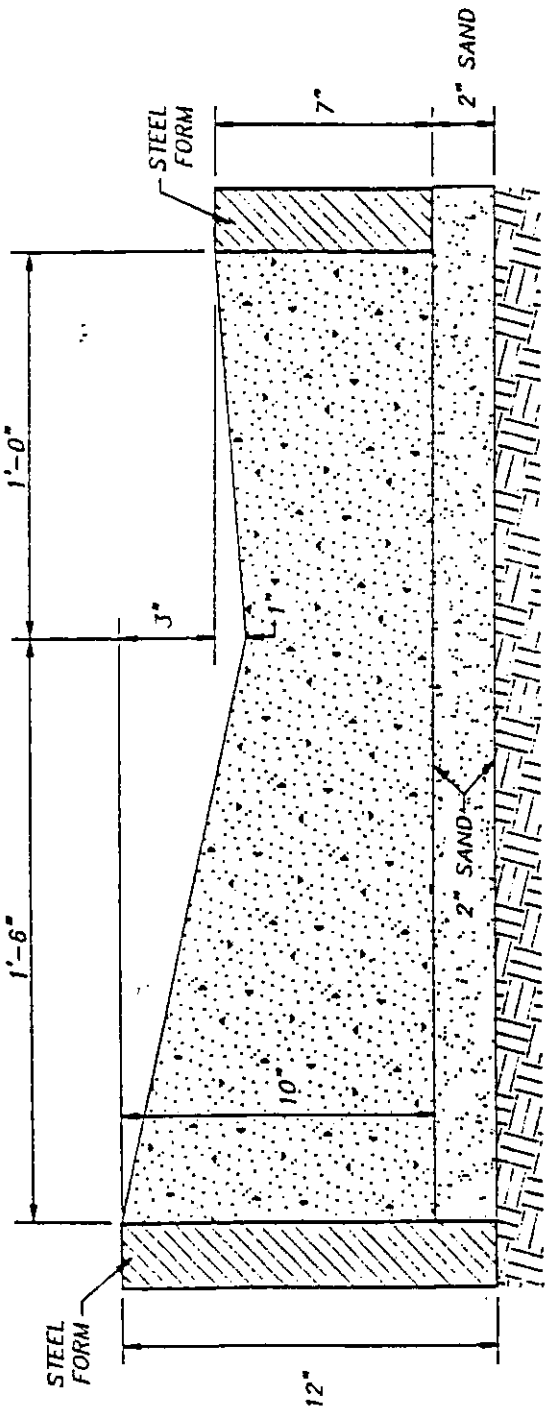


VERTICAL CURB DETAIL

NO SCALE

ILLUSTRATION NO. 5

ILLUSTRATION NO. 6



FORMING DETAIL FOR DRIVE-OVER CURB