

CITY CLERK OF PARAGOULD
FILED
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Goldie Wise
GOLDIE WISE, City Clerk

CITY OF PARAGOULD

ORDINANCE

FOR

SUBDIVISION STREET DESIGN

AND

CONSTRUCTION REQUIREMENTS

EFFECTIVE DATE: _____

CITY OF PARAGOULD

SUBDIVISION STREET DESIGN AND CONSTRUCTION REQUIREMENTS

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CITY OF PARAGOULD SUBDIVISION CONSTRUCTION REQUIREMENTS

SECTION 1 DESIGN STANDARDS

- A. Conformity - The Developer shall conform to the official plans and regulations that make up the Comprehensive Plan, including the Land Use Plan, the Master Street Plan, Access Control, Setback Ordinances, the Community Facilities Plan, the Zoning Ordinance, and this Ordinance. Except for street and storm drainage geometries, pavement related items, and testing requirements, in the case of a conflict, the above Plans and Ordinances override the requirements in this Ordinance.

There shall be no change in the direction of any natural drainage channels unless otherwise approved in writing by the City. Lot lines should be located along the natural drainage channels. No building shall be constructed across a natural drainage area.

B. Street Design Principles

1. Extensions: All Street Extensions shall be projected at the same or greater width, but in no case less than the standards shown in the Master Street Plan. All new streets shall meet the minimum widths shown in the Master Street Plan for the appropriate street classification.
2. Substandard Widths: Subdivisions that join existing streets shall dedicate additional right-of-way to meet the minimum widths shown in the Master Street Plan for the appropriate street classification.
3. On streets with sidewalks, the sidewalk and curb and gutter at all intersections shall be modified to accommodate the handicapped.

C. Drainage

1. All subdivisions shall have a storm drainage system based on a 10 year flood frequency. The drainage system shall be designed by a Professional Engineer. Unless otherwise approved by the Construction Review Committee in writing, all subdivisions shall have an underground storm drainage system. The storm drainage system shall include an adequate discharge system outside the proposed subdivision for the removal of the storm water.
2. All discharge pipes, ditches, etc. shall have easements wide enough for the appropriate equipment to maintain the facility.

3. The Construction Review Committee may require a higher flood frequency for cross drainage structures at streams and major drainage ditches.

D. Residential Lot and Block Standards

1. Residential Lots: The use and design of lots shall conform to the provisions of the Zoning Ordinance where zoning is in effect. Lots served by septic tanks shall meet the Health Department requirements. Insofar as practical, side lot lines should be at right angle to straight street lines or radial to curved street lines.
2. Easements: Easements at least twenty-five (25) feet wide shall be centered along rear lot lines and along side lot lines where needed to provide for utility lines and drainage. The Planning Commission or City may require larger easements for major utility lines, unusual terrain or drainage problems to accommodate the facility plus the equipment necessary to maintain the facility.

Easements shall also be provided for all outside drainage facilities necessary to adequately drain the subdivision. The easement shall be wide enough for operation of the appropriate equipment necessary to maintain the drainage facility.

E. Variations

If the provisions of these standards are shown by the Developer to cause undue hardship as they apply to his proposed subdivision, the City Council may grant a variance to the Developer from such provisions, so that substantial justice may be done and the public interest secured; provided that the variation will not have the effect of nullifying the intent and purpose of this ordinance.

In granting variances and modifications, the City Council may impose such conditions as will, in its judgement, secure substantially the objectives of the standards or requirements so varied or modified.

CITY OF PARAGOULD SUBDIVISION CONSTRUCTION REQUIREMENTS

SECTION 2
STORM DRAINAGE AND ROADWAY PLANS AND SPECIFICATIONS

A. Development of Detailed Plans and Specifications

The detailed plans and specifications and the construction of both storm drain and roadway improvement projects and water and sewer improvement projects shall be under the supervision of a Registered Professional Engineer, hereafter referred to as the Engineer.

After approval of the preliminary plat the Engineer/Developer shall submit for review and approval the following detailed plans and specifications prior to beginning any construction.

1. The Engineer/Developer shall submit five (5) copies of the detailed plans and specifications for all proposed street and storm drainage improvements to the Public Works Director for review by the Construction Review Committee. This shall include the storm drainage system design. Upon approval, one (1) signed copy will be returned to the Engineer/Developer and four (4) copies will be retained by the City.

Upon completion of the project and before acceptance by the City, the Engineer will submit (1) copy of the As Built Plans, with all changed indicated in Red, to the Public Works Director and they shall become the permanent record.

2. The Engineer/Developer shall submit detailed plans and specifications for all proposed water and sewer improvements to the City Light and Water Department for review and approval. The documents and number of copies submitted shall be in accordance with the requirements of the City Light and Water Department.

B. Definition of Terms

For the purpose of these regulations, certain terms used herein are defined as follows:

- o AASHTO: American Association of State Highway and Transportation Officials.
- o ACHM: Asphalt Concrete Hot Mix.
- o ADT: Average Daily Traffic.
- o AHTD: Arkansas State Highway and Transportation Dept.
- o Construction Review Committee: Shall consist of the Mayor, the City Inspector, and the Public Works Director.

Two (2) of the three (3) members are required to make a review or inspection.

- o LL: Liquid Limit - the moisture content at which a soil passes from a plastic state to a liquid state.
- o PL: Plastic Limit - the moisture content at which a soil is considered to be in a plastic state.
- o PI: Plastic Index - the numerical difference between the LL and the PL of a soil.
- o PSI: Pounds per square inch.
- o Proof Rolling - use of a 50-ton pneumatic roller or loaded single axle dump truck.
- o Construction Review Committee - A committee consisting of representatives from at least two of the following offices: the Mayor's Office, the City Inspector's Office, and the Public Works Director's Office.
- o Semi-Final Construction Inspection - made upon completion of the initial phase of work to begin the 80% lot development or 2 year maintenance period.
- o Final Street Condition Inspection - made after 80% of the lots have been developed, or a period not exceeding 2 years from the date of the Semi-Final Construction Inspection, to document any street repairs needed prior to placing the final ACHM Surface course.
- o Final/Acceptance Inspection - made after all street work is completed and the final ACHM Surface course has been placed.

C. Time Limitations and Stage Construction

1. After approval of the detailed plans and specifications, construction shall begin within one (1) year and the construction completed in three (3) years. If not, the original plans and specifications shall be subject to review and updating by the Construction Review Committee. Any changes resulting from this review shall be made at the Developer's expense.
2. Stage Construction: The following applies to subdivisions approved for stage construction.
 - a. If the plans and specifications for the future stage(s) are submitted and approved as a part of the original plans and specifications and construction work has not started within two (2) years after the approval date of the plans and specifications, or if construction work ceases during any twelve (12) month period thereafter, the plans and specifications shall be re-submitted to the Public Works Director for review by the Construction Review Committee of any updating necessary to meet the current standards and

specifications. Any changes resulting from this review and update shall be made at the Developer's expense.

- b. If the detailed plans and specifications for each future stage are developed at a later date, they shall be submitted to the Public Works Director for review by the Construction Review Committee. The plans and specifications shall meet the current standards and regulations at the time of the review. Any changes resulting from this review shall be made at the Developer's expense.

D. Functional Street Classifications:

The following street classifications are in accordance with the functional classification of the Master Street Plan for the City of Paragould.

CLASS I - INTERSTATE FREEWAYS - Use formal design procedures.

CLASS II - OTHER FREEWAYS - Use formal design procedures.

CLASS III- OTHER PRINCIPAL ARTERIALS - Use formal design procedures.

CLASS IV - MINOR ARTERIALS - Use formal design procedures.

ALL COMMERCIAL/INDUSTRIAL STREETS - Use formal design procedures.

CLASS V - COLLECTORS - The collector street system provides both land access service and traffic circulation within residential neighborhoods, commercial and industrial areas. It differs from the arterial system in the facilities on the collector system may penetrate residential neighborhoods, distributing trips from the arterials through the area to the ultimate destination. Conversely, the collector street also collects traffic from local streets in residential neighborhoods and channels it into the arterial system.

CLASS VI - LOCAL STREETS - The local street system comprises all facilities, except ALLEYS, not on one of the higher systems. It serves primarily to provide direct access to abutting land and access to higher order systems. It offers the lowest level of mobility and usually contains on bus routes. Service to through traffic movements usually is deliberately discouraged.

E. Typical Sections and Minimum Grades:

1. Curb and Gutter Section - Unless otherwise approved in writing by the City, the Standard Curb and Gutter TYPE I shall be used to provide drainage for future overlays. The Typical Sections for TYPE I and TYPE II are shown in Appendix A.

a. Type Curb and Gutter

1. STANDARD CURB AND GUTTER - TYPE I shall be 24 inches wide, 6 inches high at the front and 12 inches high at the back to provide a 6 inch high curb. The curb will have to be modified for driveways.

If requested, the Construction Review Committee may approve a standard curb and gutter 18 inches wide. If approved, the minimum distance back to back of curb shall remain 24 feet and the street surface will be 21 feet wide.

2. MODIFIED CURB AND GUTTER - TYPE II shall be 24 inches wide, 6 inches high at the front and 9 inches high at the back to provide a 3 inch mountable curb. To provide support for the mountable curb, the base shall be carried 1 foot beyond the back of the curb.

b. Minimum roadway width of 24 feet back to back of curb for a 24 inch or 18 inch curb and gutter.

c. Minimum roadway grade of 0.30% (3.6 in/100 ft) with 0.50% (6 in/100 ft) being desirable.

d. The street cross slope (crown) shall be 4 inches in 10 feet when the street grade is 0.30% or less. If the street grade is greater than 0.50% the crown can be reduced to 2 inches in 10 feet.

e. The minimum pipe and culvert grade shall be 0.20% (2.4 in/100 ft) with 0.30% (3.6 in/100 ft) being desirable.

f. Minimum ROW width of 50 feet.

g. Minimum base thickness shall be in accordance with Table 1 in Appendix A.

2. Open Ditch Section - A Typical Section is shown in Appendix A. OPEN DITCH SECTIONS MUST BE APPROVED IN WRITING.
 - a. A minimum finished street crown section of 28 feet with a minimum ditch depth of 18 inches.
 - b. The street cross slope (crown) shall be 4 inches in 10 feet.
 - c. The minimum pipe and culvert grade shall be 0.20% (2.4 in/100 ft).
 - d. Minimum ROW width of 50 feet.
 - e. The minimum pavement width shall be 20 feet with 4 foot sealed shoulders. Instead of the 4-foot sealed shoulders, the Developer may elect to pave 28 feet and use an edge stripe to form the shoulder line.
3. The Asphalt Hot Mix Pavement Section: The Developer shall select one of the following Paving Alternates for placing the Hot Mix Pavement. The same Alternate shall be used for all streets in a subdivision. No mixing of the Alternates will be allowed.
 - a. PAVING ALTERNATE 1 - The hot mix pavement shall be placed in two lifts. The first lift of the depth specified shall be placed during the initial construction. The pavement shall be maintained until 80% of the lots in the subdivision have been developed, but not more than 2 years after the semi-final construction inspection. At that time the streets will be reviewed by the Construction Review Committee. All pavement failures and areas showing distress shall be patched to the satisfaction of the Public Works Director, and the final 1-1/2 inches of hot mix pavement shall be placed. The final lift shall also overlay the entire gutter section.

Based on the condition of the initial pavement, the Construction Review Committee may consider the following actions concerning the final overlay. Since the gutter will be overlay, a reasonable length of street and logical termini should be selected when evaluating a street section. Also, since the gutter will be overlay, drainage will be critical in some subdivisions. Drainage may require all of the street section be overlaid.

1. If there are few minor failures, patches, or utility cuts, and the pavements appears to be structurally sound, the overlay may be reduced to 1 inch.
2. If there are no failures, patches, or utility cuts, and the pavement appears to be structurally sound, the overlay may be eliminated.

NOTE - The condition of the existing streets shall be inspected and accepted by the Construction Review Committee prior to placing the final surface course. If deemed necessary by this Committee, the existing pavement shall be proof rolled and all unstable areas shall be repaired.

- b. PAVING ALTERNATE 2 - Construct the base course flush with the gutter. The base thickness shall be the minimum thickness shown in Table 1, Appendix A, plus 3 inches. The base section shall be maintained until 80% of the lots in the subdivision have been developed, but not more than 2 years after the semi-final construction inspection. At that time all failures and areas showing distress shall be repaired, and the base material shall be removed to the depth of hot mix surface required in Table 1, Appendix A. The remaining base shall be setup. Prior to placing the hot mix surface the base shall be proof rolled in the presence of the Construction Review Committee and approved for the final hot mix surface.

NOTE - The existing street and base material shall be inspected and accepted by the Construction Review Committee prior to placing the final surface course.

If an open ditch section is used, the minimum base thickness shall be that shown in Table 1, Appendix A, for that particular street and soil type.

4. Maintenance Period: During the development of 80% of the lots, or a period not exceeding 2 years after the Semi-Final Construction Inspection by the Construction Review Committee, the Developer shall be responsible for maintaining the streets and making repairs at the Developer's expense. If the repairs are not made in a timely manner, the City will repair the streets and charge the Developer for the cost of equipment, materials, and labor.

F. Pavement Sections

Most subdivision streets will be classified as Class V or Class VI. For Class V and Class VI streets, the subgrade soil classification and Table 1, Appendix A, shall be used to determine the require minimum pavement structure.

1. If it appears the subgrade soils type have changed from that used in the initial pavement analysis, the results of the sieve analysis and LL and PI tests run during the construction of the subgrade shall be used to verify the soil type used in the pavement design. If the soil type changes, the pavement structure shall be redesigned accordingly. It is strongly recommended that the Engineer have preliminary sieve analysis and LL and PI tests performed before detailed plans and specifications for the streets are prepared. Copies of all test results shall be provided to the Public Works Director.
2. Regardless of the design procedure used, the proposed pavement sections for Class V and VI shall equal or exceed the minimum pavement sections shown in Table 1, Appendix A, for the particular street classification and soil type.

G. Soils Classifications

The subgrade soils shall be classified according to the Group Index Classification into the following three (3) major soils types:

1. SANDS & GRAVELS: A-1, A-2, & A-3 Group index. These are non-plastic materials with gravel and sand size material.
2. SILTS: A-4 & A-6 Group Index. The A-4 Soil is a minus 40 sieve size which has a LL less than 40 and a PI less than 10. The A-6 Soil is a minus 40 sieve material with a LL less than 40 and a PI more than 10. Both soils have very little clay.
3. CLAYS: A-5, A-7 & A-7-6 Group Index. The A-7 and A-7-6 soils are clays and have a LL greater than 40 and a PI greater than 10. The A-5 classified soils have a LL greater than 40 and a PI less than 10. A-7 and A-7-6 soils are the very poor soils which should be avoided if possible.

H. Performance Bonds

An acceptable Performance Bond shall be provided in the amount of one hundred and twenty-five percent (125%) of the contract cost of all storm drainage and initial street improvements, or

a cost established by the City for the remaining storm drainage and initial street improvement work, against defect in materials and workmanship. After the initial construction is completed and the semi-final inspection made, a second acceptable Performance Bond shall be provide in the amount of one hundred and twenty-five percent (125%) of the estimated cost of the additional pavement to be placed after the two year maintenance period.

The bond shall be filed with the City. The form of the bond shall be determined by the City Attorney.

Based on the type Paving Alternate selected the Performance Bonds shall be released as follows:

1. PAVING ALTERNATE 1 - Upon completion of the initial pavement construction, the Semi-Final Construction Inspection, and submission of an acceptable Performance Bond for the maintenance period and final overlay, the Performance Bond for the initial improvements shall be released.

The second Performance Bond for the maintenance period and the final overlay shall be retained until:

- a. Development has been completed on at least eighty percent (80%) of lots, but not to exceed 2 years after the semi-final construction inspection,
- b. All existing street damage has been repaired to the satisfaction of the Construction Review Committee and the final hot mix surface has been placed, and
- c. The final inspection and acceptance of the street improvements by the City.

2. PAVING ALTERNATE 2 - Upon completion of the base course, the Semi-Final Construction Inspection, and submission of an acceptable Performance Bond for the maintenance period and cost of the pavement, the initial Performance Bond for the initial improvements shall be released.

The second Performance Bond for the maintenance period and the pavement shall be retained until:

- a. Development has been completed on at least eighty percent (80%) of lots, but not to exceed 2 years after the semi-final construction inspection,
- b. All existing street damage has been repaired and the hot mix surface has been placed, and

- c. The final inspection and acceptance of the street improvements by the City.

During the development of 80% of the lots, not to exceed 2 years after the Semi-Final Construction Inspection, the Developer shall be responsible for maintaining the streets and making repairs at the Developer's expense. If the repairs are not made in a timely manner, the City will repair the streets and charge the Developer for the cost of equipment, materials, and labor.

When stage construction is approved and a future stage is being developed, to protect the completed portion of the subdivision against damage due to heavy loads for street and housing construction, the Developer and Contractor for the additional stages of improvements shall be responsible for any damage to the existing street system. The Construction Review Committee shall make an initial inspection and document the conditions of the existing street system as a part of the approval of the construction plans. Another inspection shall be made of the conditions of the streets as a part of the Final Inspection of the new stage of street improvement. All damages noted by the Construction Review Committee shall be satisfactorily corrected prior to acceptance of the new stage of improvements. Repair of all damages will be at the Developer's expense.

I. Interim Changes to Existing Subdivision in Progress

During a meeting at City Hall on February 7, 1997, with the Mayor, Public Works Director, City Inspector, City Attorney, Part-Time City Engineer, and a large majority of the Developers, the following interim changes were agreed to on all current subdivisions which have received final approval by the Technical Review Committee:

1. Provide 8 inches of compacted base and the Standard Curb and Gutter with the 12 inch high back to provide a 6 inch curb.
2. All streets completed within two (2) years of the effective date of this Ordinance will receive the original 2 inches of hot mix, receive a final inspection, and be accepted by the City of maintenance after the current one (1) year maintenance period.
3. All Subdivisions which have not received final Technical Review Committee approval on this date and all streets not completed within two (2) years of the effective date of this Ordinance will be required to meet all of the requirements of this Ordinance.

CITY OF PARAGOULD SUBDIVISION CONSTRUCTION REQUIREMENTS

SECTION 3
ROADWAY, BASE, AND PAVING PLANS AND SPECIFICATIONS

Plans and specifications for proposed streets and storm drains shall equal the following minimum standards and be in accordance with the standards and figures contained in Appendix A and the City of Paragould's Master Street Plan.

A. CLEARING AND GRUBBING:

All vegetation, trees, and stumps shall be removed. Roots, and other obstructions shall be cleared and/or grubbed. Stump holes and depressions shall be backfilled with suitable material and compacted.

B. ROADWAY EMBANKMENT:

1. A suitable material or mixture of soil, stone, or gravel shall be used to form a stable embankment when compacted. It shall be free of sod, logs, stumps, roots, and other deleterious matter.
2. The surface shall be cleared and grubbed where an embankment of less than four (4) feet is to be placed.
3. Roadway embankment should be constructed in layers not to exceed eight (8) inches (loose measurement), and compacted to form a stable embankment. It shall be stable and show no signs of movement when tested by proof rolling.
4. Embankments adjacent to structures and inaccessible to normal compaction equipment should be placed in thinner lifts and compacted to form a stable embankment. It shall be stable and show no signs of movement when tested by proof rolling.

C. SUBGRADE:

1. At least the top eight (8) inches of the subgrade shall be compacted to form a stable subgrade. It shall be stable and show no signs of movement when tested by proof rolling.
2. Upon completion, the entire subgrade shall be proof rolled in the presence of the Construction Review Committee to insure a firm stable foundation for the curb and gutter, and pavement. Any unstable or yielding areas shall be removed and replaced with satisfactory material.

Proof rolling of the repaired areas shall be at the discretion of the Public Works Director.

D. FLOWABLE FILL FOR BACKFILLS:

A flowable fill consists of a mixture of portland cement, Class C or F flyash meeting the requirements of ASTM 618, minus 3/8 inch concrete sand, and water. Mixing of Class C and F flyash will not be permitted. The strength of the flowable fill may be varied by adjusting the amount of cement and flyash. The 28 day compressive strength of a 6" x 12" cylinder shall not be under 100 psi or over 250 psi with a unit weight between 120 and 130 pounds per cubic foot. The material for one cubic yard absolute volume shall be as follows:

Cement ----- 80 to 100 pounds
Fly Ash ----- 220 to 300 pounds
Sand ----- Variable to equal one cubic yard
Water ----- Approximate 70 gallons

Unless otherwise directed by the Public Works Director, the Contractor shall be responsible for designing the proposed mix.

Placing material over the flowable fill may not commence until the compressive strength has reached 50 psi when evidenced by test cylinders. Such tests shall be conducted by the Contractor.

E. CURB AND GUTTER:

1. All utility lines, including service lines, shall be laid, backfilled with compacted base, sand, flowable fill, or other material suitable to the Public Works Director before the curb and gutter is constructed.
2. Any service or utility line crossings not placed before the pavement and curb and gutter are constructed shall be installed by boring, or a procedures approved in writing by the City.
3. The depth of base material under the curb and gutter shall be carried at minimum of 6 inches beyond the back of the curb or preferably 1 foot for support if the curb and gutter is to be placed with a slipform machine. The subgrade and base under and behind the curb and gutter shall be shaped and compacted to the required grade and section as shown on the plans. If the Construction Review Committee deems it necessary, the area under the curb an gutter shall be tested by proof rolling.

4. All curbs and gutters shall be constructed of Portland Cement Concrete consisting of a minimum of 5-1/2 sack mix with a minimum 28 day compressive strength of 2,100 psi. If excessive cracking occurs, the Public Works Director may require future curb and gutter to be cured with a curing compound or wet burlap.
5. The dimensions of the curb and gutter are shown in the typical sections in Appendix A.

The top surface of the curb and gutter shall be within +/- 3/8" when tested with a 10-foot straightedge. Sections not meeting this tolerance shall be corrected or removed and replaced at the Developer's/Contractor's expense.

6. Where flexible pavements are used, expansion joints shall be provided at stationary structures, such as drop inlets, and at curb returns. They are to be constructed at right angles to the curb line. Where rigid pavements are used, sawed joints shall be provided to match the transverse joint in the concrete pavement and expansion joints shall be provided at stationary structures such as drop inlets and at curb returns. The expansion joint material shall have a thickness of one-half (1/2) inch.
7. After the concrete curb and gutter has set, the area behind the curb shall be partially backfilled before the base material is placed and compacted.
8. Curb modifications for driveways shall be in accordance with City standards or the example shown in Appendix A. As an alternative, the entire curb and gutter section for the driveway shall be sawed vertically for the full depth and removed. The curb and gutter shall then be constructed as a part of the driveway. IN NO CASE SHALL THE DRIVEWAY BLOCK THE FLOW LINE OF THE EXISTING GUTTER. The modified curb and gutter must have 1/2 inch filled constructing joints at each side of the driveway.

NOTE: The driveway shall not be constructed flush with the gutter unless the driveway and house are at an elevation higher than the top of the curb.

F. **AGGREGATE BASE COURSE:**

The base material shall be crushed stone or pit run gravel meeting the AHTD Standard Specification requirements of Section 303, "Aggregate Base Course" Class 3 through 8 as specified in Table 303-1 with the exceptions noted below:

1. The depth of aggregate base course shall be within $\pm \frac{1}{2}$ inch of the required depth. If the deficient depth is greater than $\frac{1}{2}$ inch, the existing material represented by the test(s) will be ripped up, new added and re-compacted to the proper density. The average of all depth measurements shall not be less than the required depth shown in Table 1, and any depth in excess of $+\frac{1}{2}$ inch will not be used in computing the average depth. If deficient base material is not added to the existing base material, the deficient depth will be added to the required depth of the surface course or concrete pavement.
2. The base course should be constructed in layers not exceeding six (6) inches of compacted depth to a density that produces a stable mat.
3. When stringlined, the base course surface shall be within $\pm \frac{1}{2}$ inch of the typical section shown on the plans.
4. Prior to placing the asphalt hot mix or concrete pavement, the entire surface shall be proof rolled in the presence of the Construction Review Committee to insure a firm foundation. All unstable or yielding areas shall be reworked or removed and replaced. Proof rolling of the repaired areas will be at the discretion of the Public Works Director.

G. ASPHALT STABILIZED BASE/CEMENT TREATED BASE:

Asphalt Stabilized Base Course (Black Base) and the Cement Treated Base shall meet the AHTD Standard Specification requirements of each type material. The entire subgrade shall be proof rolled in the presence of the Construction Review Committee prior to placing the Base. The Black Base or Cement Treated Base shall meet the straightedge and depth requirements of base course.

The depth of the Asphalt Stabilized Base or the Cement Treated Base shall be within $\pm \frac{1}{2}$ inch of the required depth. The average of all depth measurements shall not be less than the depth shown in Table 1, and any depth in excess of plus $\frac{1}{2}$ inch will not be used in computing the average depth. If not, the deficient depth will be added to the required depth of the surface course or concrete pavement.

H. ASPHALT CONCRETE HOT MIX (ACHM) BINDER AND SURFACE COURSES:

The ACHM Binder and Surface Courses shall meet the AHTD Standard Specifications for each material with the following exceptions:

1. The entire base surface shall be proof rolled in the presence of the Construction Review Committee to insure a firm foundation prior to placing the ACHM material.
2. The depth of the ACHM Binder Course shall be within $\pm \frac{1}{2}$ inch of the required depth shown in Table 1. The average of all depth measurements shall not be less than the required depth shown in Table 1, and any depth in excess of $+ \frac{1}{2}$ inch shall not be used in computing the average depth. Any deficiency in the average depth will be added to the required depth of ACHM Surface Course.
3. The depth of the ACHM Surface Course shall be within $\pm \frac{1}{4}$ inch of the required depth shown in Table 1, plus any additional depth(s) required due to the deficient depth in the base and binder courses. The average of all depth measurements shall not be less than the required depth, and any depth in excess of $+ \frac{1}{4}$ inch will not be used in computing the average depth. If the average depth is less, it will be corrected by overlaying with additional of ACHM Surface, or as directed by the Public Works Director.
4. The Contractor shall furnish mix designs for ACHM Binder Courses and ACHM Surface Courses if requested by the Public Works Director.
5. Both binder course and surface course shall be compacted to a minimum of 92% of the maximum theoretical density shown on the mix design. A calibrated nuclear gauge may be used to determine the ACHM density on the roadway.
6. The hot mix surface shall not show any deviation greater than $\frac{1}{4}$ inch when checked with a 10 foot straight edge. Any deviation greater than this shall be corrected by grinding, removing and replacing, or a method satisfactory to the Public Works Director.

I. PORTLAND CEMENT CONCRETE PAVEMENT:

The Portland Cement Concrete (PCC) Pavement shall meet the AHTD Standard Specification of Section 501, "Portland Cement Concrete Pavement", with following exceptions:

1. Prior to placing the PCC pavement, the entire subgrade or base surface shall be proof rolled in the presence of the Construction Review Committee to insure a firm foundation.
2. The depth of the PCC Pavement shall be within $\pm \frac{1}{4}$ inch of the required depth shown in Table 1, plus any additional depth required as a result of a deficient subbase depth.

3. The concrete shall be a minimum 5-½ sack mix and have a minimum 28 day compressive strength of 3,000 psi. The concrete shall contain an air entraining agent which produces 5% ± 2% air entrainment in the concrete. The concrete pavement shall be cured with a curing compound meeting the AHTD Standard Specification for Curing Compound.
4. The concrete surface shall not show any deviation greater than ¼ inch when checked with a 10 foot straight edge. Any deviation greater than this shall be corrected by grinding, removing and replacing, or a method satisfactory to the Public Works Director.
5. Unless otherwise specified, all pavement lanes shall be tied together with 30-inch #4 reinforcing bars on 36-inch centers. At least one-half of the reinforcing bar length shall be coated with grease to break the bond to the adjoining slab.
6. Unless otherwise specified, the transverse joints shall be sawed in the concrete pavement perpendicular to the centerline and on 15 foot centers. The depth of the joint shall not be less than 1/3 the slab thickness (T) PLUS ½ inch. The joint width shall be approximately ¼ inch. All joints shall be filled with joint material meeting the AHTD Standard Specification requirements for PCC Pavement contraction and warping joint material.

CITY OF PARAGOULD SUBDIVISION CONSTRUCTION REQUIREMENTS

SECTION 4
STORM DRAINAGE AND PIPE REQUIREMENTS

The plans and specifications for proposed storm drainage systems shall be equal to the following minimum standards.

A. PIPE

1. All pipe shall have a minimum cover at subgrade elevation of one (1) foot at the shoulder or curb, unless otherwise approved by the Public Works Director. All pipe shall be capable of withstand a H-20 loading.
2. The reinforced concrete pipe may be circular or arched. Class III shall be the minimum used. The joint seal shall be either cement mortar, (3 parts sand and 1 part cement), or cold applied performed plastic gaskets.
3. Corrugated steel pipe may be circular or arched and from a source approved by the Public Works Director. Coupling bands shall be the same metal as used in the pipe and shall be a single or double piece with bolts and angles.
4. Corrugated Polyethylene and Acrylonitrile Butadiene-Styrene Pipe shall meet the AHTD requirement for that type pipe and be from a source approved by the Public Works Director.
5. The reinforced concrete flared end sections shall meet the applicable requirements for Class II or higher pipe. The corrugated steel flared end sections shall meet the same standards as the corrugated steel pipe.

B. EXCAVATION, TRENCH PREPARATION AND INSTALLATION:

NOTE: ALL EXCAVATION AND TRENCHING OPERATIONS SHALL MEET THE APPLICABLE SAFETY STANDARDS.

1. Where the pipe is laid below the ground line, the trench shall be excavated to the required depth and width to allow sufficient room for tamping of backfill. Where pipe is not laid in a trench, a uniform firm bed shall be provided.
2. All storm drainage pipe, under any street improvement, shall be backfilled with base material, sand, flowable fill, or other suitable material and compacted to provide an unyielding subgrade when proof rolled. The backfill base material should be brought up evenly on each side of the pipe to avoid displacement. Special care should be taken to compact the material under the haunches of the pipe.

3. When culvert pipe is to be relayed, the construction procedures shall be the same as new pipe.
4. When structural plate pipe and arches are used, the materials and construction procedures shall be in accordance with the AHTD Standard Specification requirements for Structural Plate Pipe and Arches.

C. HEADWALLS, DROP INLETS, AND JUNCTION BOXES:

1. All headwalls, drop inlets, junction boxes, etc. shall be constructed of reinforced concrete. All concrete shall be a minimum of 5½ sack mix and have a 28 day compressive strength of 3,000 psi. The walls of drop inlets, junction boxes, and other such structures not located under the pavement or curb and gutter or at locations not subject to traffic, may be constructed with concrete blocks instead of a reinforced concrete wall.
2. The distance between drop inlets shall not exceed 300 feet.
3. The minimum thickness of reinforced concrete walls, floors, and tops shall be six (6) inches. Concrete drainage structures shall be constructed with reinforcing steel having a maximum spacing of twelve (12) inches on centers and a minimum size of number four (4) bar.
4. Concrete bottoms for structures shall be poured at least 24 hours prior to beginning construction of the vertical walls.
5. Junction boxes shall have a minimum interior dimension of four (4) feet to allow for cleaning. The walls shall form a tight joint with the floor and around the inlet and outlet pipes. The pipes shall be flush with the inside surface of the wall.
6. Headwalls may be required on the upstream and downstream sides of the storm drainage system where no other drainage structures are required, or flared end sections may be used when approved by the Public Works Director.

D. PIPE UNDERDRAIN:

1. Pipe underdrains (french drains) shall be installed in any area where subsurface water is encountered and other areas as directed by the Public Works Director. The underdrain shall be located just behind the curb as shown in the drawing in Appendix A.
2. Outlets should be provided on at least 300 foot intervals, but in no case shall the length exceed 700 feet. To the extent possible, the underdrain pipe should be connected to a drop inlet or box culvert of the storm drainage system.

3. The underdrain material and construction procedures shall be in accordance with the AHTD Standard Specifications for Pipe Underdrain.

CITY OF PARAGOULD SUBDIVISION CONSTRUCTION REQUIREMENTS

SECTION 5
INSPECTION AND SAMPLING AND TESTING REQUIREMENTS

- A. Inspections:
1. All Phase, Semi-Final, and Final Inspections shall be made by a Construction Review Committee. The Construction Review Committee shall consist of representatives of at least two of the following Departments: the Mayor's Office, the Public Works Director's Office and the City Inspector's Office. The Phase, Semi-Final, and the Final Inspections will be made with the Contractor and the Developer.
 2. The following three (5) types of inspections shall be made during the process of the project.
 - a. Intermediate Progress Inspections can be made at any time.
 - b. Phase Inspections are REQUIRED at the completion of each major phase of work and prior to the start of the next phase of work.
 - c. Semi-Final Construction Inspection which will be made upon completion of the initial phase of work.
 - e. Final Street Condition Inspection will be made after 80% of the lots have been developed, or a period not exceeding 2 years from the date of the Semi-Final Construction Inspection, to document any street repairs needed prior to placing the final ACHM Surface course.
 - f. Final/Acceptance Inspection will be made after the street work is completed and the final ACHM Surface course has been placed. Acceptance during this inspection will accept the street into the City Street System for maintenance in the future.
 3. The Public Works Director has the authority to increase the amount of inspection and/or sampling and testing.
 4. A Phase Inspection and testing are REQUIRED upon the completion of the following phases of work.
 - a. Completion of the Subgrade - Proof rolling the subgrade.
 - b. Completion of the Base Course and Curb and Gutter - Proofing rolling the base; checking the base for grade, crown, and smoothness; checking the base depth; and checking the curb and gutter for grade and smoothness.

The Contractor will provide the holes for the depth checks at the locations selected by the Public Works Director.

- c. Completion of the Paving - Checking the grade, crown and smoothness; and checking the hot mix depth from cores taken by the Contractor at locations selected by the Public Works Director.
5. Any work performed on a Phase prior to the approval of the previous phase by the Construction Review Committee shall be removed and replaced with satisfactory materials and workmanship.
6. All unsatisfactory work or materials shall be removed and replaced with satisfactory materials and workmanship.
7. If the project is long, the Phase Inspection may be made on a smaller portion of the project, but not less than 1,000 feet in length.
8. The Contractor is responsible for contacting the Public Works Director at least 24 hours prior to the need of a major phase inspection. The Public Works Director's office will be responsible for contacting the Construction Review Committee.

B. Sampling and Testing Requirements

1. The following is the minimum sampling and testing frequency:
 - a. Embankment/Subgrade: Proof rolled with a 50-ton pneumatic roller or a loaded single axle dump truck.
 - e. Base Course: Proof rolled with a 50-ton pneumatic roller or a loaded single axle dump truck. A minimum of 1 depth measurement (depth sounding) per 600 lineal feet of 2-lane roadway, with a minimum of 3 depth measurements per project. Depth measurements will be made by the Contractor at the locations selected by the Public Works Director and in the presence of the Public Works Director.
 - f. Asphalt Stabilized Base (Black Base), ACHM Binder, and ACHM Surface Courses: For each material, a minimum of 1 depth measurement per 600 lineal feet of 2-lane roadway, with a minimum of 3 depth measurements per project. Depth measurements shall be made from cores cut by the Contractor at locations selected by the Public Works Director. If requested by the Public Works Director, 1 density test per 600 lineal feet of roadway. The Contractor may use a calibrated nuclear density gauge.

- g. Structural Concrete for Drainage Structures and Curb and Gutter: If requested by the Public Works Director, a minimum of one (1) set of three (3) concrete cylinders per 50 cubic yards of structural concrete or portion thereof or per 1000 feet of curb and gutter. One (1) cylinder will be broken at 7 days and the other two (2) will be broken at 28 days. The Contractor will be responsible for making, curing, and breaking the cylinders. The results will be reported to the Public Works Director.

- h. Concrete Pavement: If requested by the Public Works Director, a minimum of one (1) set of three (3) concrete cylinders per 1000 lineal feet of pavement, with a minimum of one (1) set per project. The Contractor shall be responsible for making, cured, and breaking the cylinders in 7 and 28 days as described above. Also, one (1) core and depth measurement per 600 feet of 2-lane completed pavement with a minimum of 3 per project. The cores will be taken by the Contractor at locations designated by the Public Works Director.

CITY OF PARAGOULD SUBDIVISION CONSTRUCTION REQUIREMENTS

SECTION 6
PROVISIONS FOR ACCEPTANCE OF SPECIFICATION AND
NON-SPECIFICATION MATERIALS AND WORKMANSHIP

The following provides for corrective actions to be taken and/or provisions for accepting a street into the City System when test results indicate non-specification materials or workmanship have been incorporated into the project. Any penalties which are assessed shall be paid to the City by the Owner/Developer before a street will be accepted by the City. The penalties paid to the City shall be used at the discretion of the City to construct and/or maintain streets.

1. Density of ACHM Binder and Surface: No individual density shall be lower than 90.0% of the maximum theoretical density. Any section with a density below that value shall be removed and replaced. The average of all densities for the project shall not be less than 92.0% of the maximum theoretical density. If this average is less than 92%, the following penalties shall be assessed:

91.5% to 91.9%-- 3% of the cost of the in place material.
91.0% to 91.4%-- 5% of the cost of the in place material.
90.5% to 90.9%--15% of the cost of the in place material.
90.0% to 90.4%--30% of the cost of the in place material.
Below 90.0%-----Remove and replace.

2. Structural Concrete, Concrete Pavement Strength: The average 28 day compressive strength of the two (2) cylinders of a set shall be at least 3,000 psi. If the average strength is lower, the following penalties shall be assessed:

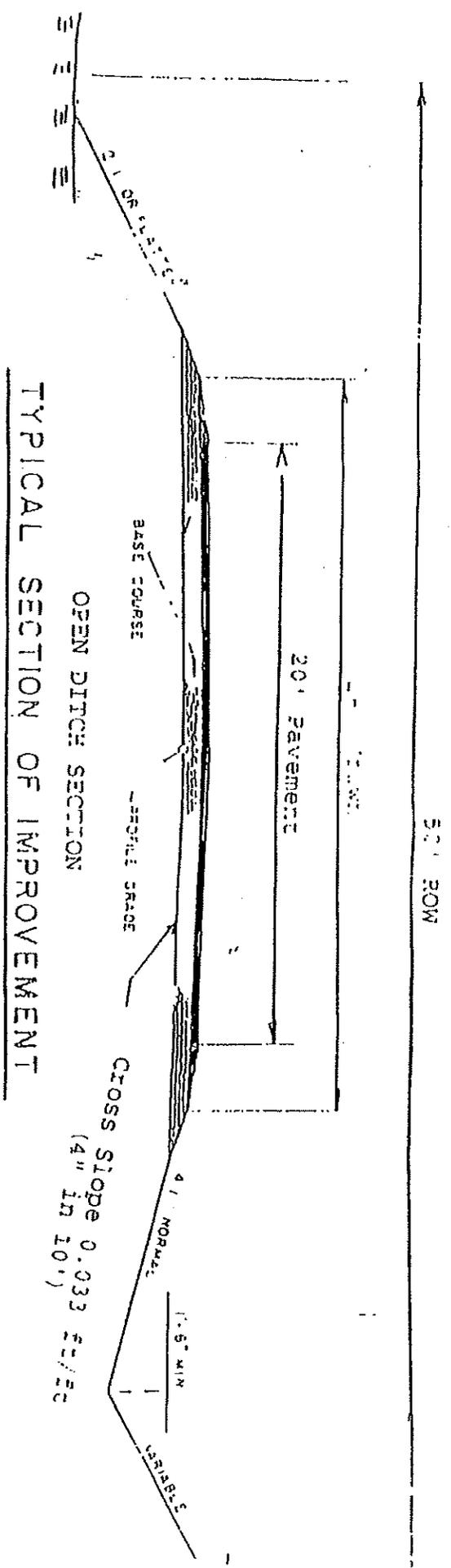
2800 to 2999 psi- 5% of the cost of the in place material
2600 to 2799 psi-10% of the cost of the in place material
2300 to 2599 psi-25% of the cost of the in place material
2000 to 2299 psi-40% of the cost of the in place material
Below 2000 psi---Remove and replace

3. Structural Concrete Strength for Curb and Gutter: The average 28 day compressive strength of the two (2) cylinders of a set shall be at least 2,100 psi. If the average strength is lower, the following penalties shall be assessed:

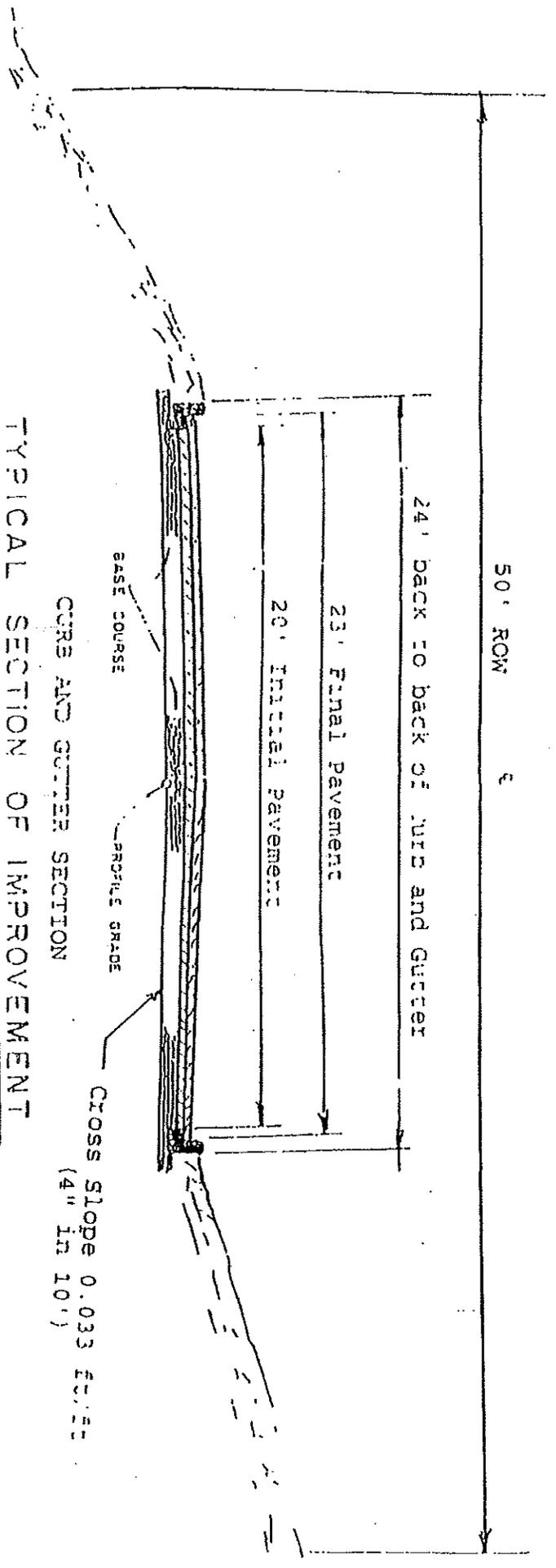
2000 to 2099 psi- 5% of the cost of the in place material
1900 to 1999 psi-10% of the cost of the in place material
1800 to 1899 psi-25% of the cost of the in place material
1700 to 1799 psi-40% of the cost of the in place material
Below 1700 psi---Remove and replace

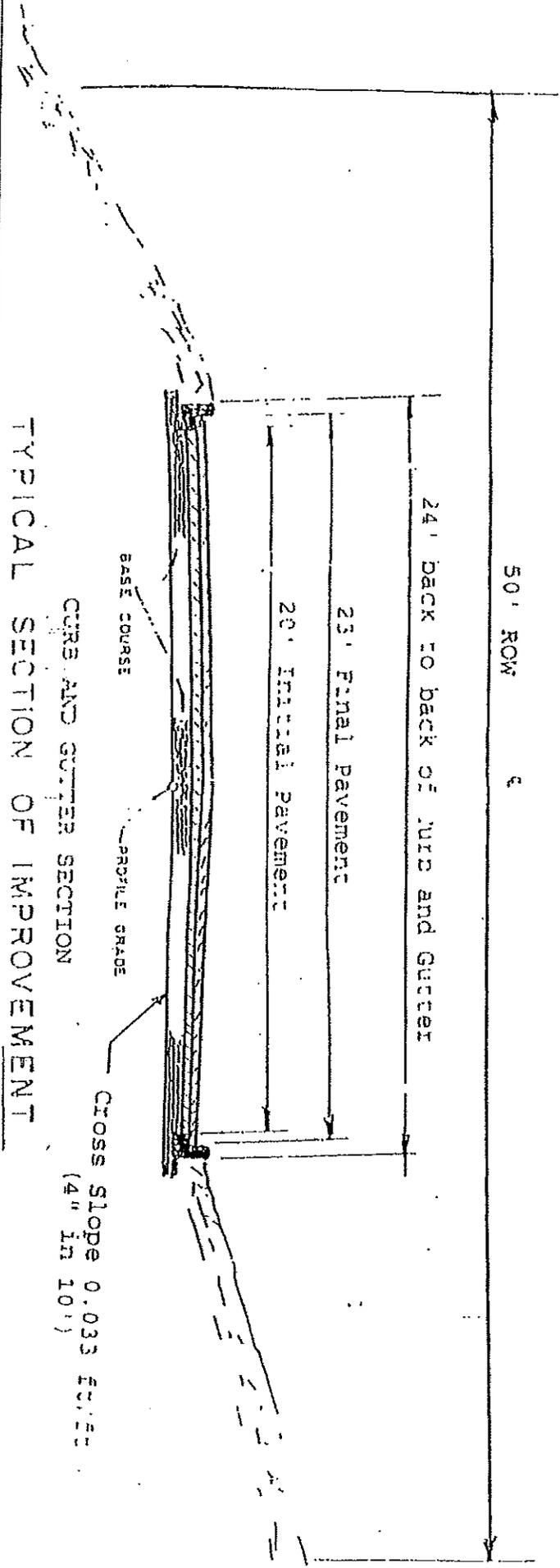
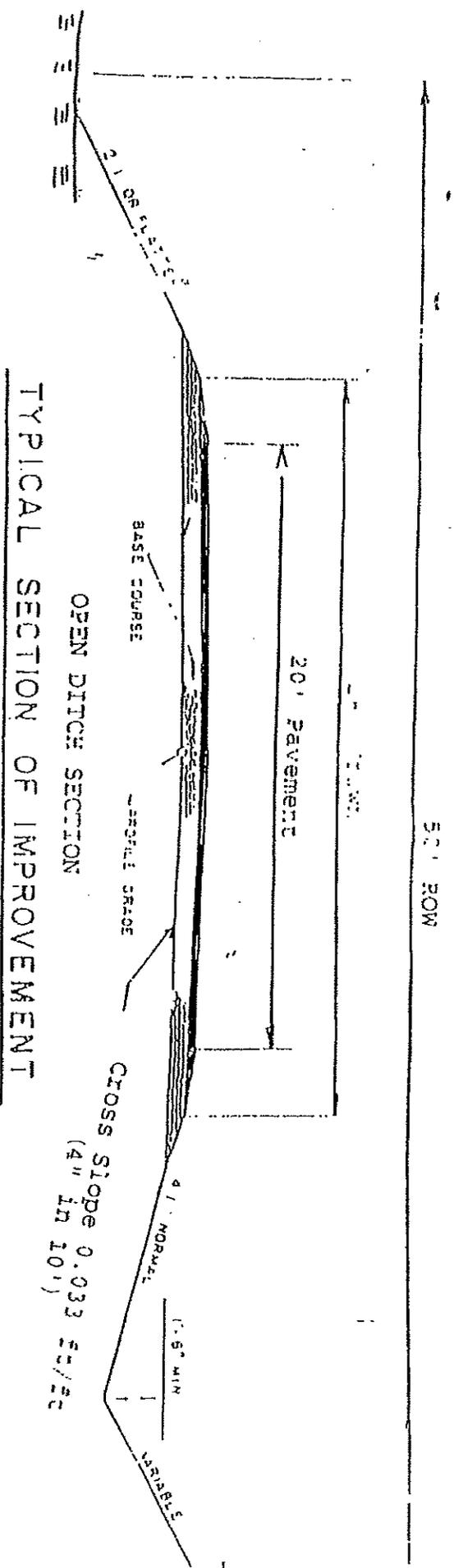
4. Concrete Pavement Depth: The concrete pavement depths shall be within $\pm \frac{1}{4}$ inch of the required depth plus any additional depth required as a result of a deficient subbase depth. The average of all depth measurements shall not be less than the required depth, and any depth in excess of $+\frac{1}{4}$ inch will not be used in computing the average depth. If the average depth is less, the following penalties shall be assessed:
- $\frac{1}{4}$ to $-\frac{3}{8}$ inch----- 5% of the in place materials cost.
 - $\frac{3}{8}$ to $-\frac{1}{2}$ inch-----10% of the in place materials cost.
 - $\frac{1}{2}$ to $-\frac{5}{8}$ inch-----25% of the in place materials cost.
 - $\frac{5}{8}$ to $-\frac{3}{4}$ inch-----40% of the in place materials cost.
 - More than $-\frac{3}{4}$ inch-----Remove and replace.

APPENDIX A

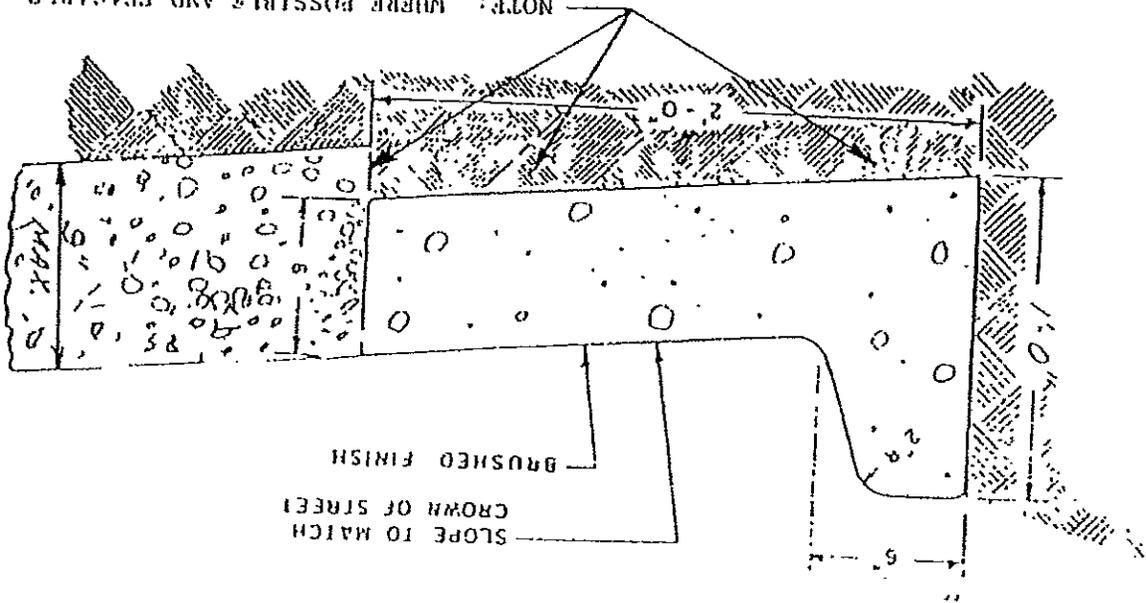


TYPICAL SECTION OF IMPROVEMENT





CURB & GUTTER SECTION WITH CONCRETE PAVEMENT.



STREET RIGHT OF WAY LINE

Variable

MINIMUM ELEVATION -
THE SAME AS TOP OF CURB

CONCRETE DRIVE SURFACE (MIN. SLOPE)

4" - 6"

TO BE REMOVED

Cut to a Minimum Depth
of 4" and make clean Bre

Flexible or Rigid
Pavement Structure

Subgrade

OPTIONAL CONSTRUCTION METHOD

As an alternate, the entire curb and gutter section for the driveway may be sawed full depth and removed. The curb and gutter section removed shall then be reconstructed as a part of the driveway. The modified curb and gutter must have the shape shown above, and have 1/2" filled construction joints at each end of the driveway.

TYPICAL DRIVEWAY CUT

FIGURE III