

# **TECHNICAL STANDARDS HANDBOOK**

**For the City of Augusta, Maine**

**As Approved by the Augusta Planning  
Board, August 12, 1991.  
Amended February 13, 2007.  
Amended August 9, 2016.**



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# CHAPTER 1

## GENERAL PROVISIONS

### 1.1 Introduction

The design standards in this handbook replace sections of Part 6 of the City of Augusta Code of Ordinances, Chapter 300 - Land Use Ordinance, as amended. These standards were written based on accepted engineering practices, the Institute of Traffic Engineers "Transportation and Traffic Engineering Handbook" second edition, and other local municipality standards.

These standards provide for the proper installation of public *and private* improvements within the City of Augusta; are intended to minimize long-term maintenance and repairs of those improvements; and are designed to protect the environment as well as to promote the health, safety and welfare of the community.

Revision 97 Emphasis placed upon drainage.

### 1.2 Applicability

The standards outlined in this handbook are applicable to all development in the City of Augusta.

### 1.3 Waiver & Modification

A variation in the strict application of the standards outlined in this handbook may be permitted when, in the opinion of the Planning Board and the City Engineer, topography, soil conditions, wetland impacts, and/or special project design features (such as but not limited to innovative designs accommodating pedestrian movement) warrant such variation provided that public convenience, safety, health and welfare will not be affected adversely and the general intent of the standards are not violated. In those instances where a waiver has been denied because of public convenience, safety, health, or welfare impacts, an appeal for reconsideration may be made to city council.

# CHAPTER 2

## DEFINITIONS

Part 2, Definitions, of the City of Augusta Land Use Ordinance shall be used as a supplement to this chapter. As used in these standards, the following words shall have the meaning ascribed to them as follows:

- AASHTO  
American Association of State Highway and Transportation Officials  
Most guidelines for roadway design are from this organization.
- ADT  
Average Daily Traffic
- ADT per Residential Unit  
For the purposes of these standards, ADT per Residential Unit equal 10 trips.  
Source: Table 3-1 General Guide on Trip End Generation Rates by Land Use, Transportation and Land Development by Vergil G. Stover and Frank J. Koepke and published by the Institute of Transportation Engineers.
- Base Course (or Aggregate Base Course)  
The layer or layers of select material (usually gravel) of designated thickness placed on a subgrade to support a surface course.
- Bond  
A surety bond or a form of security approved as to form by the City of Augusta Director of Finance which may include a letter of credit or escrow account.
- City Engineer  
The City Engineer, acting directly or through his/her duly authorized representatives.
- Development  
Any improvements done on any property which triggers the need for approval by the City; by way of regulation, rule, or ordinance of City, State, or Federal government.
- Developer  
Any person, group of persons, organizations, etc., whose concern and desire is to improve land in accordance with the development regulations of the City of Augusta.
- Driveway  
A vehicular travel way serving up to 2 residential units. Driveways are typically private in nature and solely serve the residential units.

- ITE  
Institute of Transportation Engineers—The organization publishes a reference handbook entitled “Transportation and Traffic Engineering.”
- MDOT Specifications  
State of Maine Department of Transportation Standard Specifications, Highways and Bridges, current revision.
- Pavement Structure  
The combination of subbase, base course and surface course placed on a subgrade to support the traffic load and distribute it to the streetbed.
- Private Way  
For the purpose of these standards, private way shall refer to a privately owned and maintained street or road.
- Reserve or Spite Strip  
Any strip of land along a right-of-way located for the purpose of preventing development of abutting land through deprivation of required frontage or control of access to the right-of-way. See Subdivision Regulations in City of Augusta Land Use Ordinance.
- Right-of-Way (ROW)  
A general term denoting land, property or interest therein, usually a strip, acquired for or devoted to a street or road.
- Road  
A general term denoting a public or private way for purposes of vehicular travel, including the entire area within the right-of-way. For the purpose of these standards, road shall refer to non-development and rurally located public and private ways, usually of rural design. See Land Use Ordinance.
- Sidewalk  
That portion of the street primarily constructed for the use of pedestrians, also called pedestrian way.
- Slopes  
A side slope is the downward slope adjacent to the shoulder (or sidewalk) of the road, which may go to a ditch or original ground. A backslope is the upward slope to original ground on the other side of a ditch (or shoulder in the case of a ledge cut).
- Street  
A general term denoting a public or private way for purposes of vehicular travel, including the entire area within the right-of-way. For purpose of these standards, street shall refer to all development of public and private ways, rural and urban design.

1. Residential Lane:

A street providing access to adjacent land, service to travel short distances, the lowest level of mobility and access service to other streets with a maximum ADT of 250.

2. Residential Street:

A street providing access to lots in a residential subdivision with an ADT range from 251 to 900.

3. Collector Street:

A street serving as an intracity travel corridor channelizing and distributing traffic to and from arterial and residential streets. Residential collector streets have an ADT range of 900 to 3,000.

4. Industrial & Commercial Street:

A street providing access to lots in commercial, business & professional, industrial, institutional and/or mixed use subdivisions.

5. Arterial Street:

A street which serves or connects major urban activity centers, is a high volume travel corridor, provides for long trip desires and/or is part of any integrated network providing intercounty and inter-state services. In Augusta, the I-95, Routes 3, 17, 27, 201 and 202 are considered Arterials beginning at the Urban Compact Line.

- Streetway or Roadway

That portion of a street or road including shoulders for vehicular use.

- Subgrade

The top surface of a streetbed upon which the select material is placed usually original ground or common fill material. This surface is shaped to drain.

- Surface Course

One or more layers of pavement designated to accommodate the traffic load. The top layer may be called the Wearing Course. The bottom layer may be called the Binder Course or Pavement Base Course.

- Walkway - Pedestrian way other than street sidewalk.

# CHAPTER 3

## STREET DESIGN STANDARDS

### 3.1 Purpose

The purpose of these street design standards is to ensure that public and private Right of Way improvements implemented in the City of Augusta: provide for safe and efficient vehicular and pedestrian traffic, including handicap access; provide for minimum long-term maintenance costs; protect the environment, the public and abutting landowners by providing the necessary controls for stormwater runoff, soil erosion and siltation, groundwater; and protect the public health and safety.

### 3.2 Street Design Standards

*The standards provide for flexibility, having the design fit into the surroundings, attempting not to waste our valuable natural resources, etc. Some previous limitations have been relaxed by providing strict guidelines on how to deal with those situations, without loss of quality.*

*In the event that the road or street is to be totally owned and maintained by a private entity and internal to the property of that private entity. Minimal reductions to the road standards may be accepted.*

*A special emphasis of these standards is to ensure that water is removed from any base material to protect the roadway surface from frost damage. All subbase surfaces must be sloped to drain, with no pools, puddles, or trapped water that would be internal to the base material.*

#### 3.2.1 Horizontal Alignment Of Streets

The Horizontal Alignment of Streets proposed in all subdivisions shall conform to the following standards:

1. When centerline tangents deflect from each other at the point of Intersection (PI), except at intersections, they shall be connected by a centerline curve having a minimum radius of seventy-five (75) feet for Residential Lanes, and one hundred (100) feet for Residential Streets, one hundred seventy-five (175) feet for Collector Streets and two hundred thirty (230) feet for Industrial/Commercial Streets.
2. Between reverse curves, where the radius of one or both curves is less than two hundred (200) feet, there shall be a tangent section of centerline not less than fifty (50) feet in length for Residential Lanes and Streets, and one hundred (100) feet in length for Collector, Industrial and Commercial. There shall be no superelevation in such cases.
3. Streets intersecting an arterial street shall do so at a ninety (90) degree angle.

All streets intersecting collector or residential streets shall not vary from ninety (90) degrees by more than fifteen (15) degrees.

4. At street intersections, the right-of-way lines shall be rounded by a circular arc having a minimum radius of twenty (20) feet for Lanes, Streets, and Collectors, and thirty (30) feet for Industrial and Commercial Streets. A greater radius may be required for streets intersecting at an angle other than ninety degrees (90).
5. Dead-end streets shall be provided with a turnaround having an outside paved roadway diameter of one hundred (100) feet for Residential Lanes and Streets and one hundred twelve (112) feet for Collector and one hundred and twenty (120) feet for Industrial and Commercial Streets and a right-of-way diameter of not less than one hundred and thirty (130) feet. Where any subdivision includes a dead-end lane, not designed to be so permanently, the subdivider shall make temporary provisions for a turn around as the City Engineer may deem necessary. Such turnarounds may consist of hammerheads, t-turn, or circular. For a circular turnaround, applicants are encouraged to utilize larger diameters with green space at the center of the turnaround, instead of paving the entire turnaround. Plowing snow and drainage should be a consideration in the design, along with having enough width for large vehicles to negotiate the turn around. All subject to approval by the City Engineer.
6. Street intersections with more than four (4) legs are prohibited.
7. Minimum centerline offset distances of adjacent intersections shall be as follows unless, in the opinion of the City Engineer, a shorter distance is unavoidable due to local conditions.

|  |                        |
|--|------------------------|
| <b><i>Residential to Residential</i></b> | <b><i>250 feet</i></b> |
| <b><i>Residential to Collector</i></b>   | <b><i>300 feet</i></b> |
| <b><i>Residential to Arterial</i></b>    | <b><i>500 feet</i></b> |
| <b><i>Collector to Collector</i></b>     | <b><i>300 feet</i></b> |
| <b><i>Collector to Arterial</i></b>      | <b><i>500 feet</i></b> |

8. See Section 5.5 for Sight Distance Standards.

### **3.2.2 Vertical Alignment Of Streets**

The vertical alignment of streets proposed in all subdivisions shall conform to the following standards:

1. The maximum grade for the centerline profile of all streets shall not exceed eight (8) percent except that in public lanes and streets, and private streets the maximum grade for the centerline profile may be increased to ten (10) percent and private residential lanes may be increased to twelve (12) percent.
2. The minimum tangent grade for the centerline of all streets shall not be less than one (1) percent. Grades between three-quarters (0.75) percent and one (1)

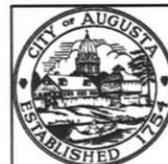
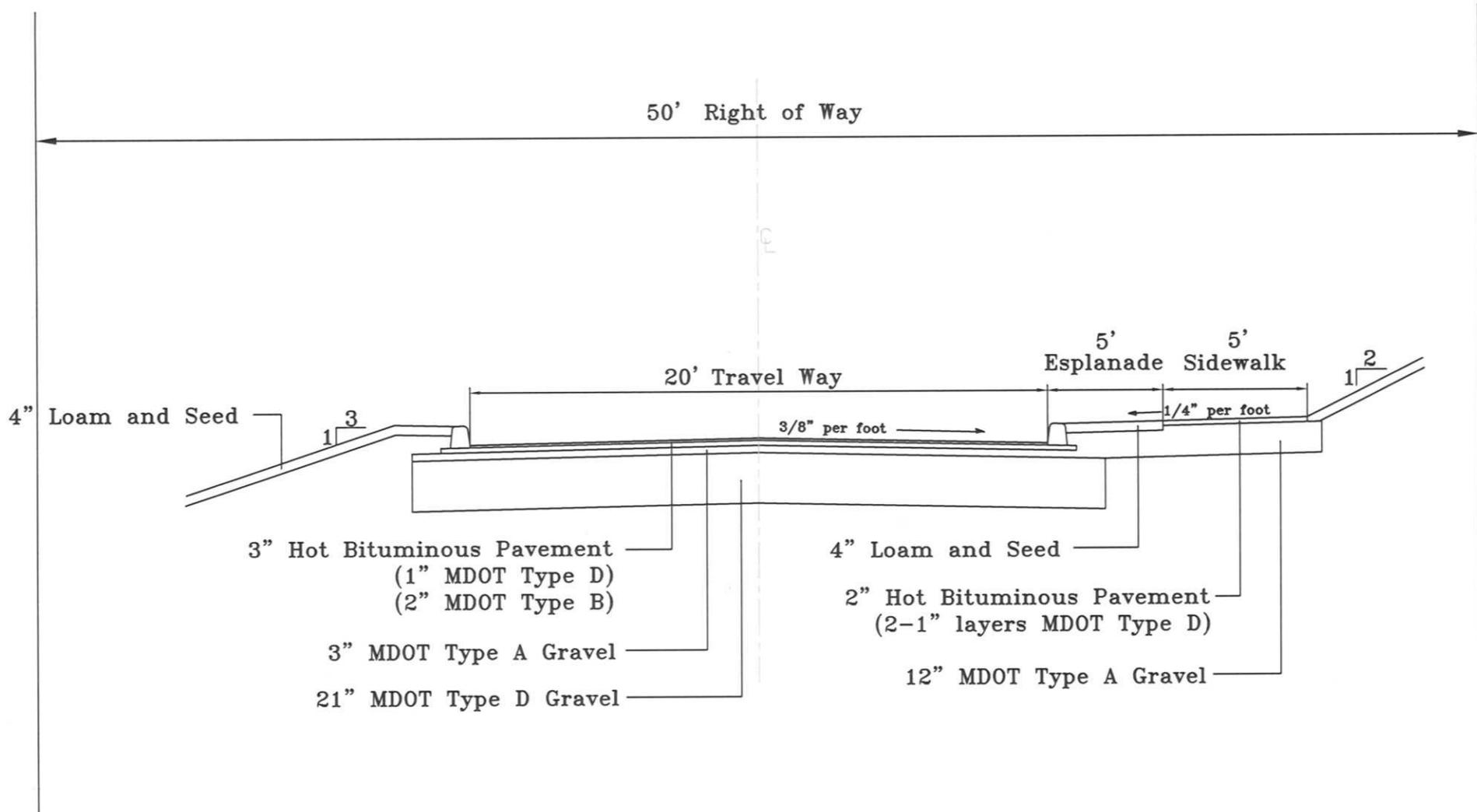
percent will be allowed if strict construction control is adhered to. As a minimum, strict construction control involves the setting of gradestakes, utilizing a competent grade foreman, and final fieldwork approved by the City Engineer.

3. Street grades at an intersection shall not be more than plus or minus three (3) percent for a distance of not less than sixty (60) feet from the travelway on each intersecting street. The grade may be increased to four percent (4%) for lanes.
4. Cross slopes for the sidewalks shall be 1/4" per foot (min.) or 3/8" per foot (max.), sloping to the top of the curb at the gutterline. Cross slopes for all streets shall be 3/8" per foot.
5. The minimum Vertical Curve Length required shall be calculated by multiplying the algebraic difference of the grades (in percent) times a factor of fifteen (15) for crest curves or times a factor of twenty (20) for sag curves. In any event a vertical curve length shall not be less than one hundred (100) feet.
6. All changes in grade (Intersecting tangents) shall be connected by vertical curves in order to provide the following minimum stopping sight distances based on the street design speed.

|   |                   |                   |                   |                   |
|---|-------------------|-------------------|-------------------|-------------------|
| <b><i>Design Speed (mph)</i></b>            | <b><i>20</i></b>  | <b><i>25</i></b>  | <b><i>30</i></b>  | <b><i>35</i></b>  |
| <b><i>Stopping sight Distance (ft.)</i></b> | <b><i>125</i></b> | <b><i>150</i></b> | <b><i>200</i></b> | <b><i>250</i></b> |

Stopping sight distance shall be calculated with a height of eye at 3.5 feet and the height of object of 0.5 feet. (Reference: Transportation and Traffic Engineering Handbook by Institute of Transportation Engineers, latest edition.)

### 3.2.3. Diagrams & Illustrations



City of Augusta  
Engineering Bureau

**PUBLIC URBAN  
LANE SECTION**

DATE:

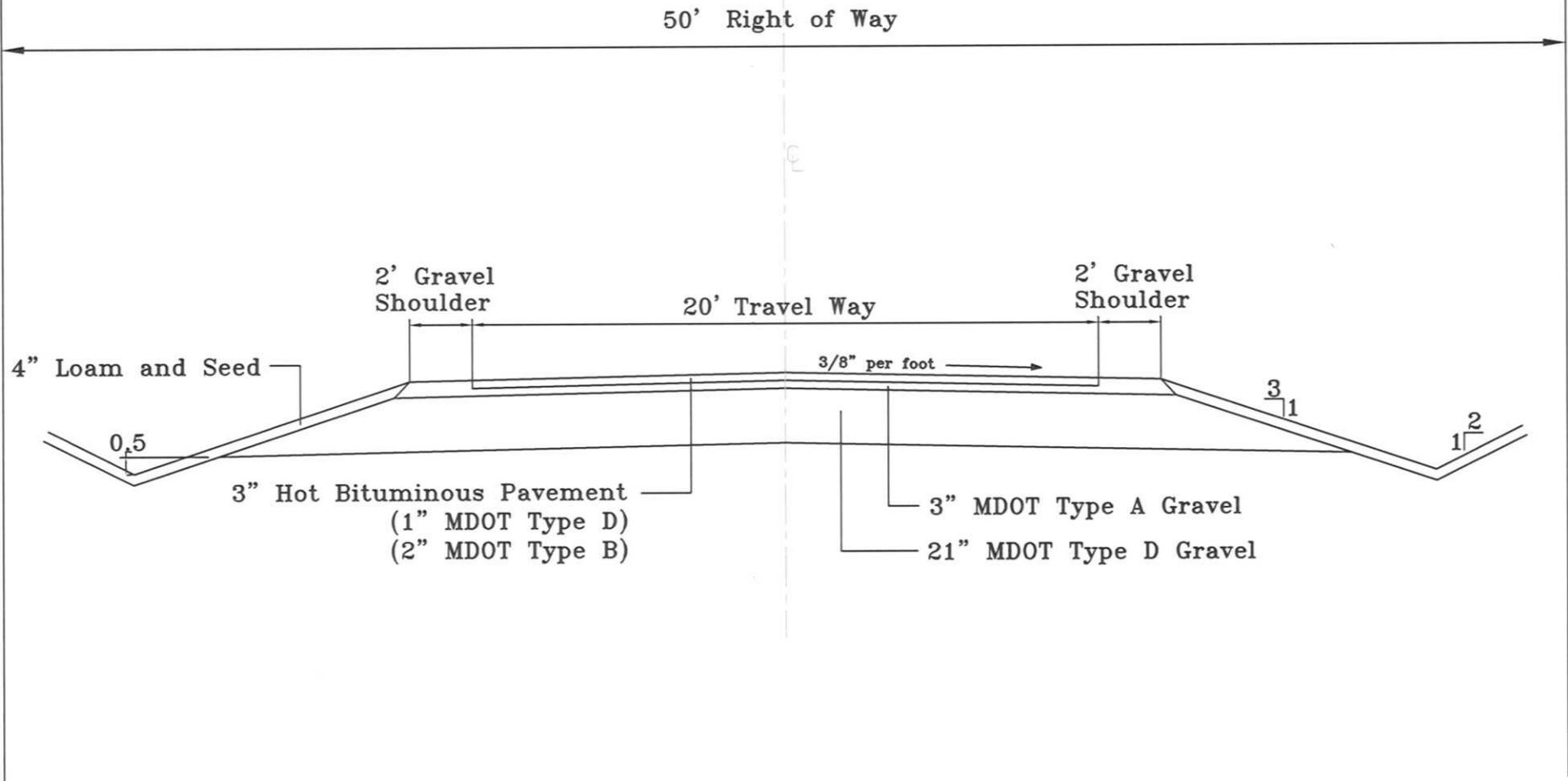
**Dec 2006**

DRAWN BY:

**J. Dostie**

FIGURE:

**3.1 A**



**NOTES:**

1. A sidewalk shall be constructed when the average lot frontage is less than 200 feet.



City of Augusta  
Engineering Bureau

**PUBLIC RURAL  
LANE SECTION**

DATE:

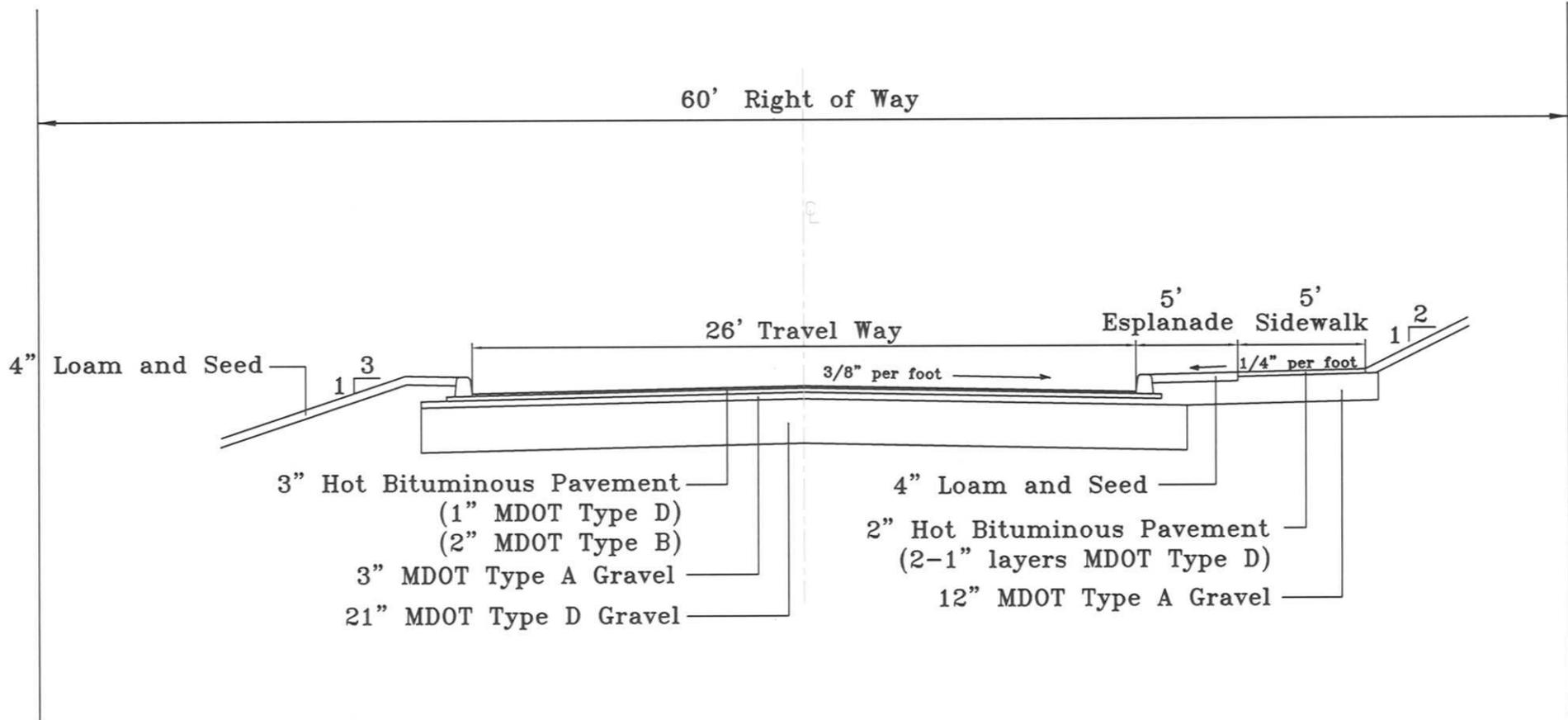
**Dec 2006**

DRAWN BY:

**J. Dostie**

FIGURE:

**3.1 B**



City of Augusta  
Engineering Bureau

**PUBLIC URBAN  
STREET SECTION**

DATE:

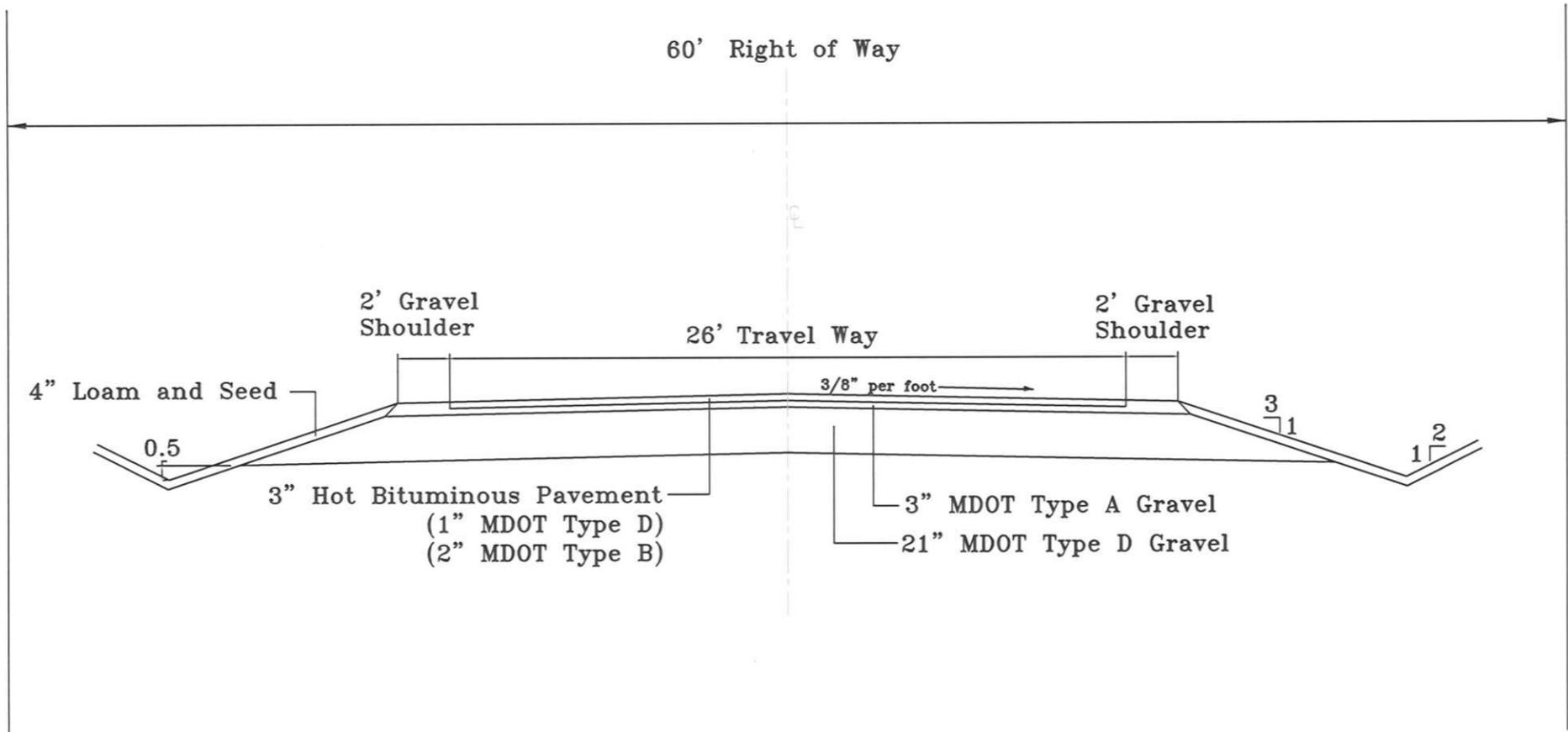
**Dec 2006**

DRAWN BY:

**J. Dostie**

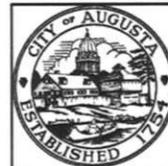
FIGURE:

**3.2 A**



**NOTES:**

1. A sidewalk shall be constructed when the average lot frontage is less than 200 feet.



City of Augusta  
Engineering Bureau

**PUBLIC RURAL  
STREET SECTION**

DATE:

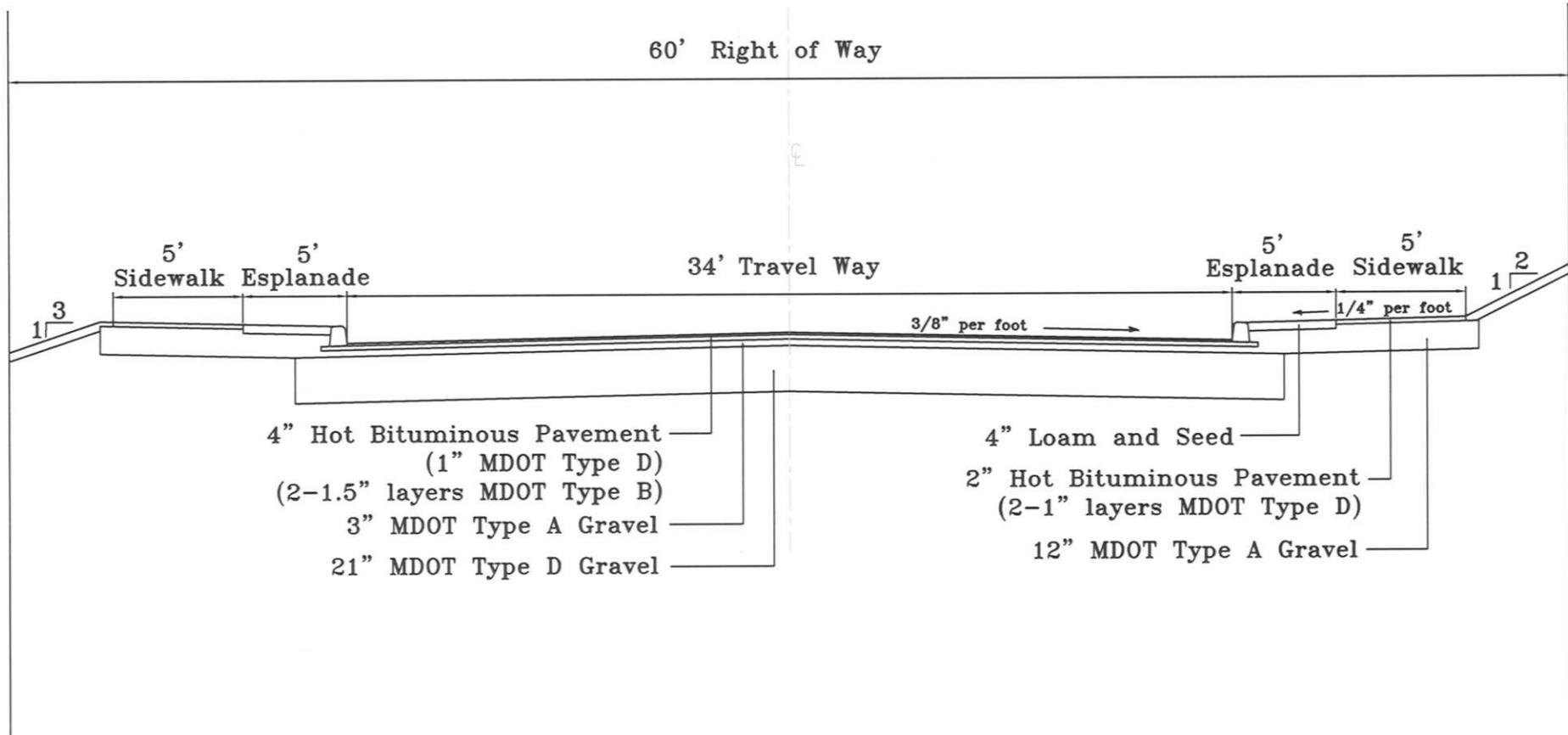
**Dec 2006**

DRAWN BY:

**J. Dostie**

FIGURE:

**3.2 B**



4" Hot Bituminous Pavement  
 (1" MDOT Type D)  
 (2-1.5" layers MDOT Type B)  
 3" MDOT Type A Gravel  
 21" MDOT Type D Gravel

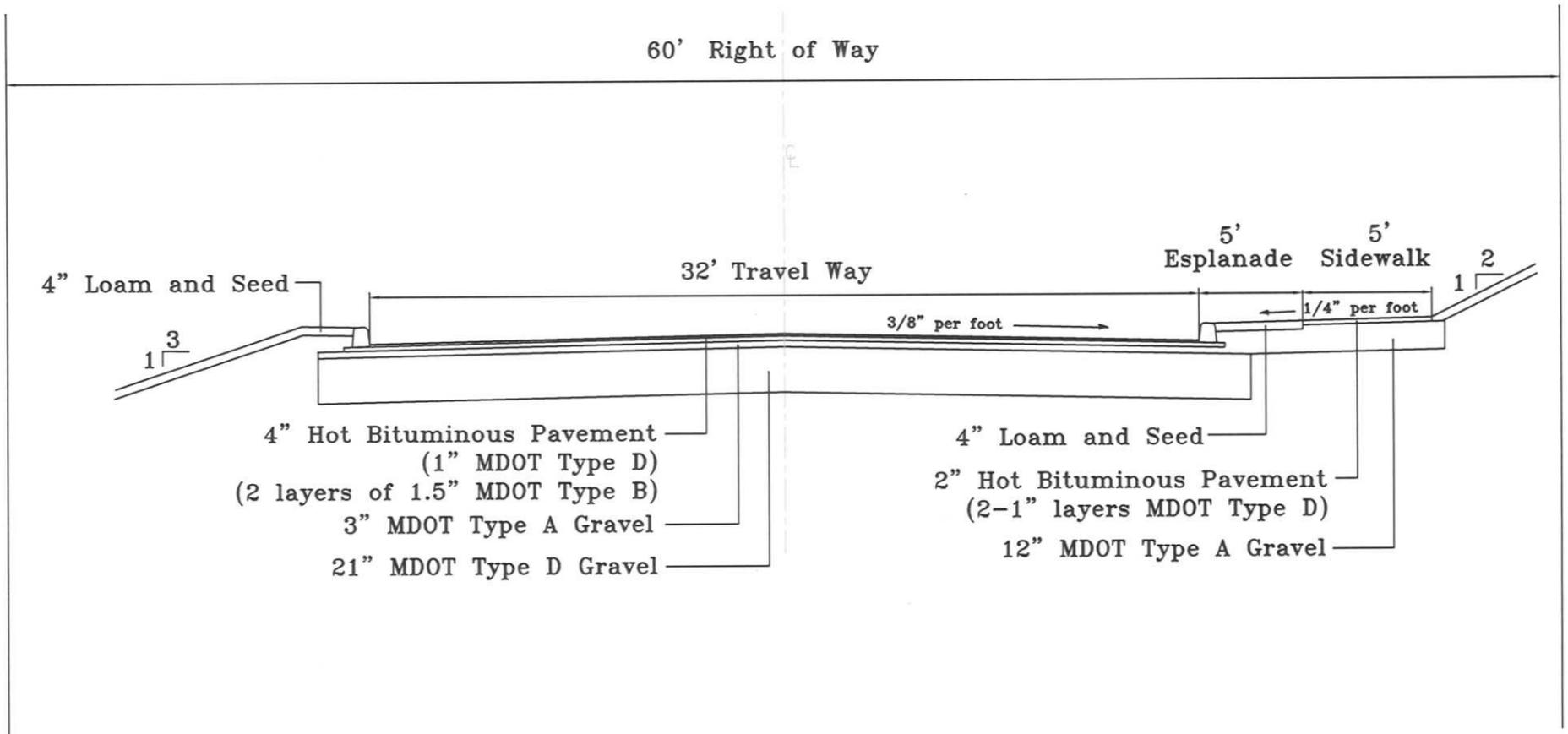
4" Loam and Seed  
 2" Hot Bituminous Pavement  
 (2-1" layers MDOT Type D)  
 12" MDOT Type A Gravel



City of Augusta  
 Engineering Bureau

**PUBLIC COLLECTOR  
 STREET SECTION**

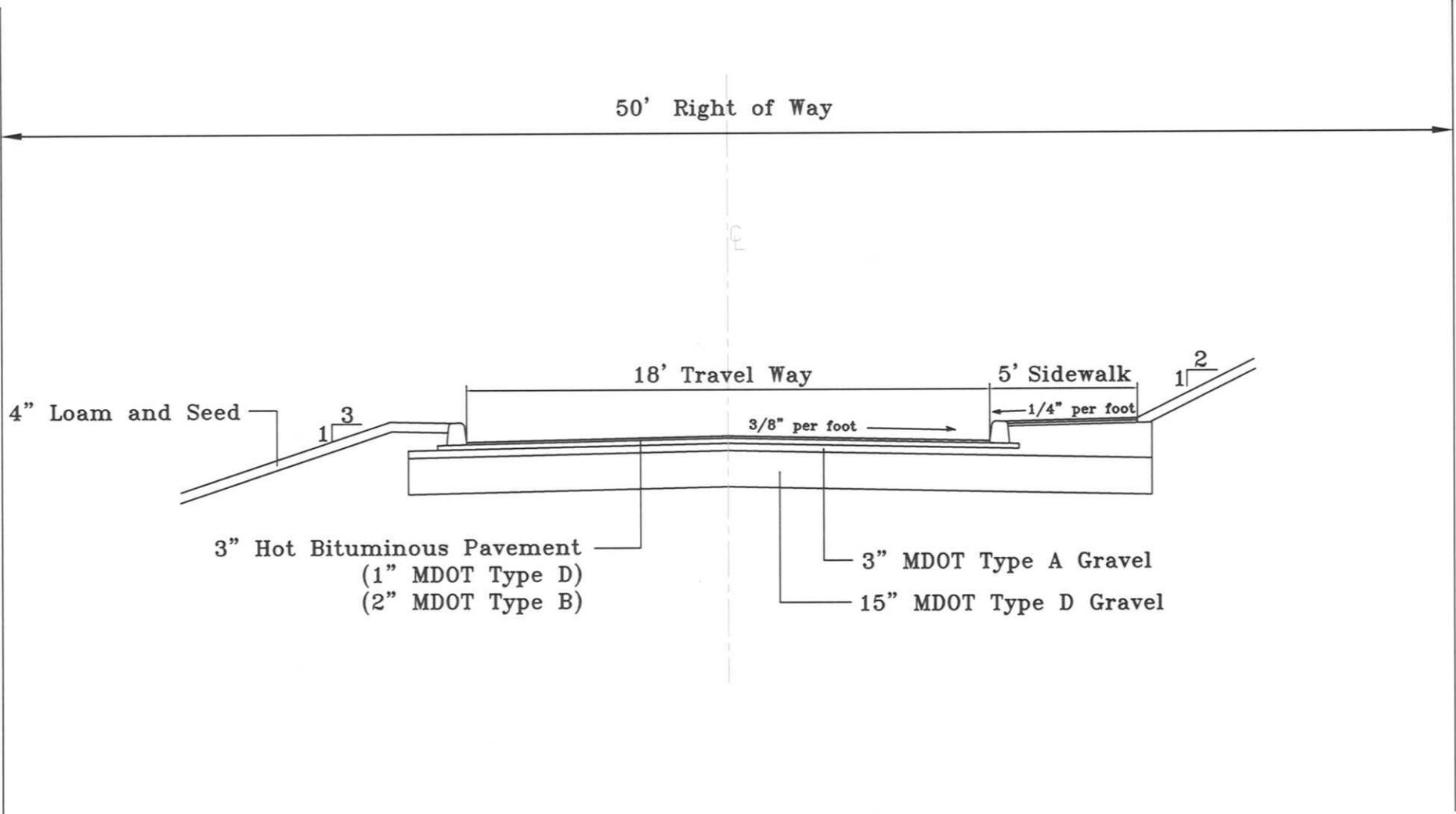
|                          |                               |                       |
|--------------------------|-------------------------------|-----------------------|
| DATE:<br><b>Dec 2006</b> | DRAWN BY:<br><b>J. Dostie</b> | FIGURE:<br><b>3.3</b> |
|--------------------------|-------------------------------|-----------------------|



City of Augusta  
 Engineering Bureau

**PUBLIC INDUSTRIAL /COMMERCIAL  
 STREET SECTION**

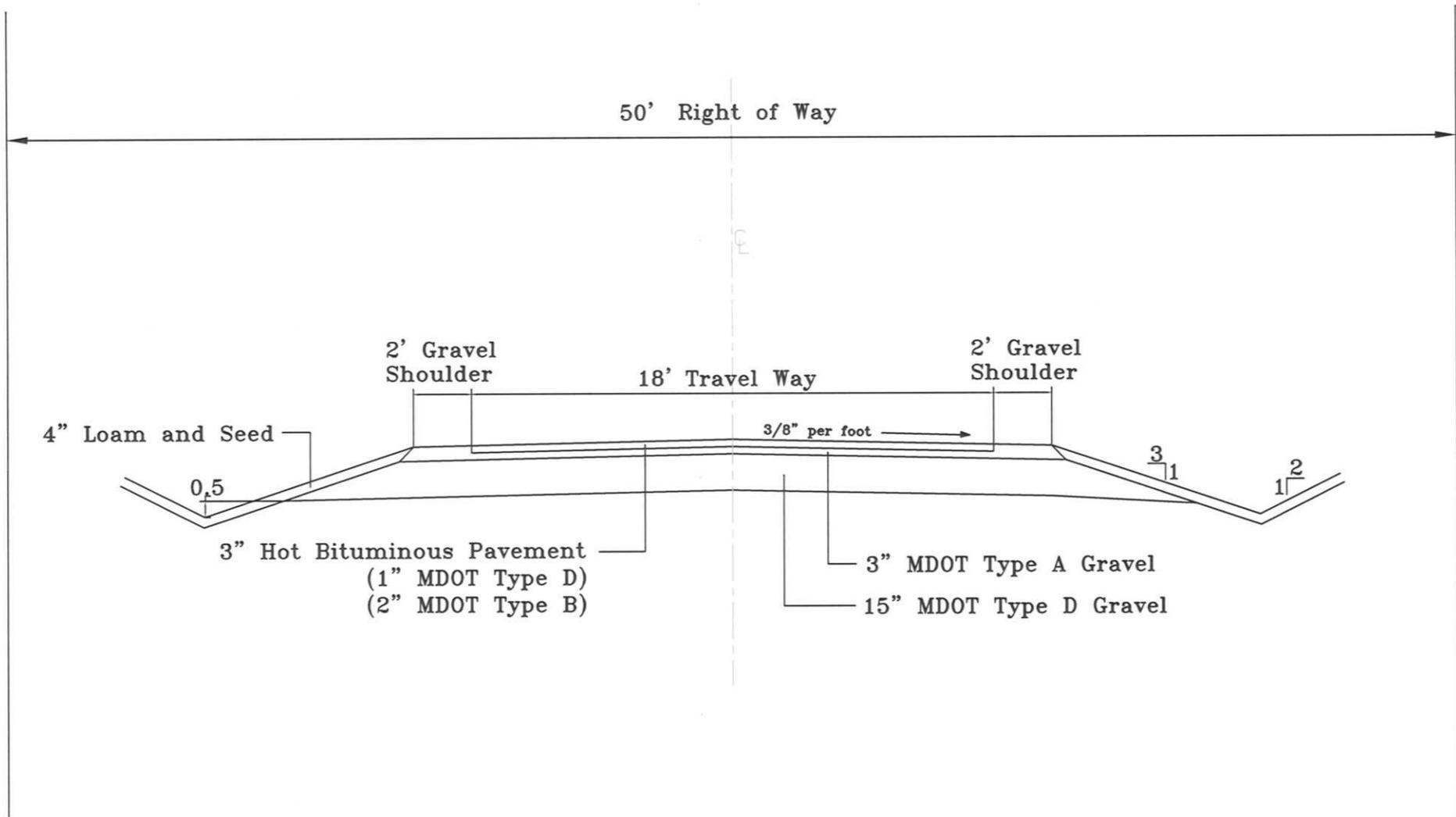
|                 |                  |            |
|-----------------|------------------|------------|
| DATE:           | DRAWN BY:        | FIGURE:    |
| <b>Dec 2006</b> | <b>J. Dostie</b> | <b>3.4</b> |



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**PRIVATE URBAN  
LANE SECTION**

|                          |                               |                         |
|--------------------------|-------------------------------|-------------------------|
| DATE:<br><b>Dec 2006</b> | DRAWN BY:<br><b>J. Dostie</b> | FIGURE:<br><b>3.5 A</b> |
|--------------------------|-------------------------------|-------------------------|



**NOTES:**

1. A sidewalk shall be constructed when the average lot frontage is less than 200 feet.
2. Gravel may be substituted for pavement.



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**PRIVATE RURAL  
LANE SECTION**

DATE:

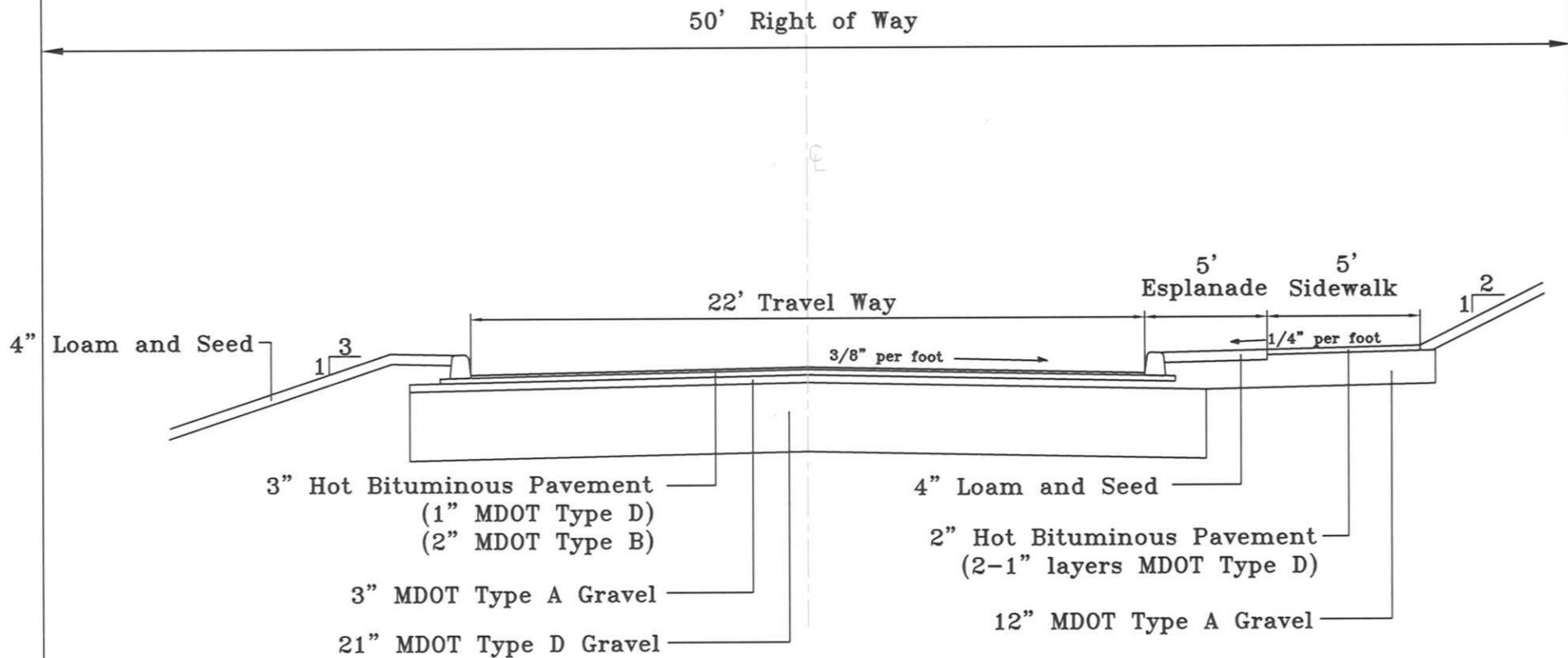
**Dec 2006**

DRAWN BY:

**J. Dostie**

FIGURE:

**3.5 B**



City of Augusta  
Engineering Bureau

**PRIVATE URBAN  
STREET SECTION**

DATE:

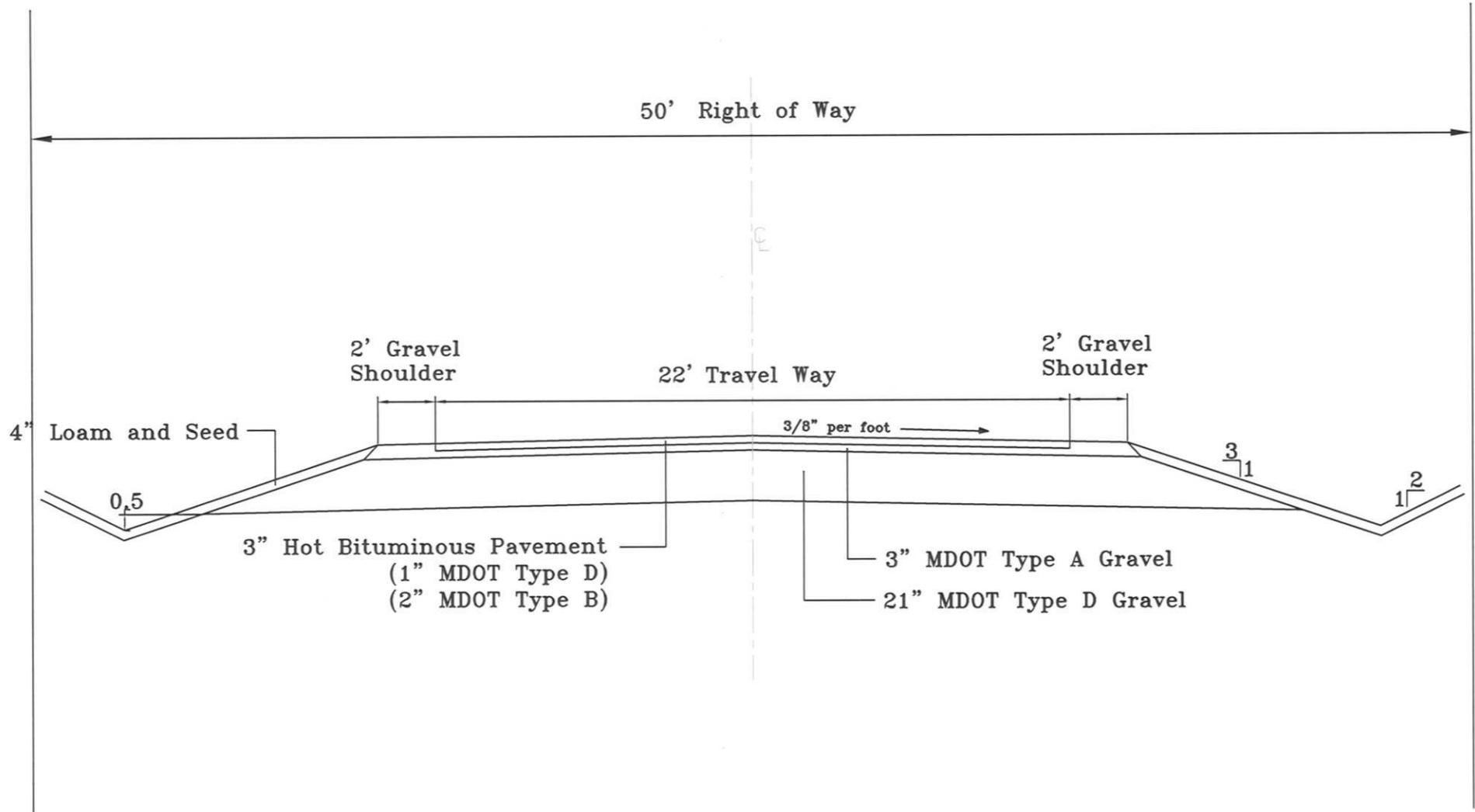
**Dec 2006**

DRAWN BY:

**J. Dostie**

FIGURE:

**3.6 A**



**NOTES:**

1. A sidewalk shall be constructed when the average lot frontage is less than 200 feet.



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**PRIVATE RURAL  
STREET SECTION**

DATE:

**Dec 2006**

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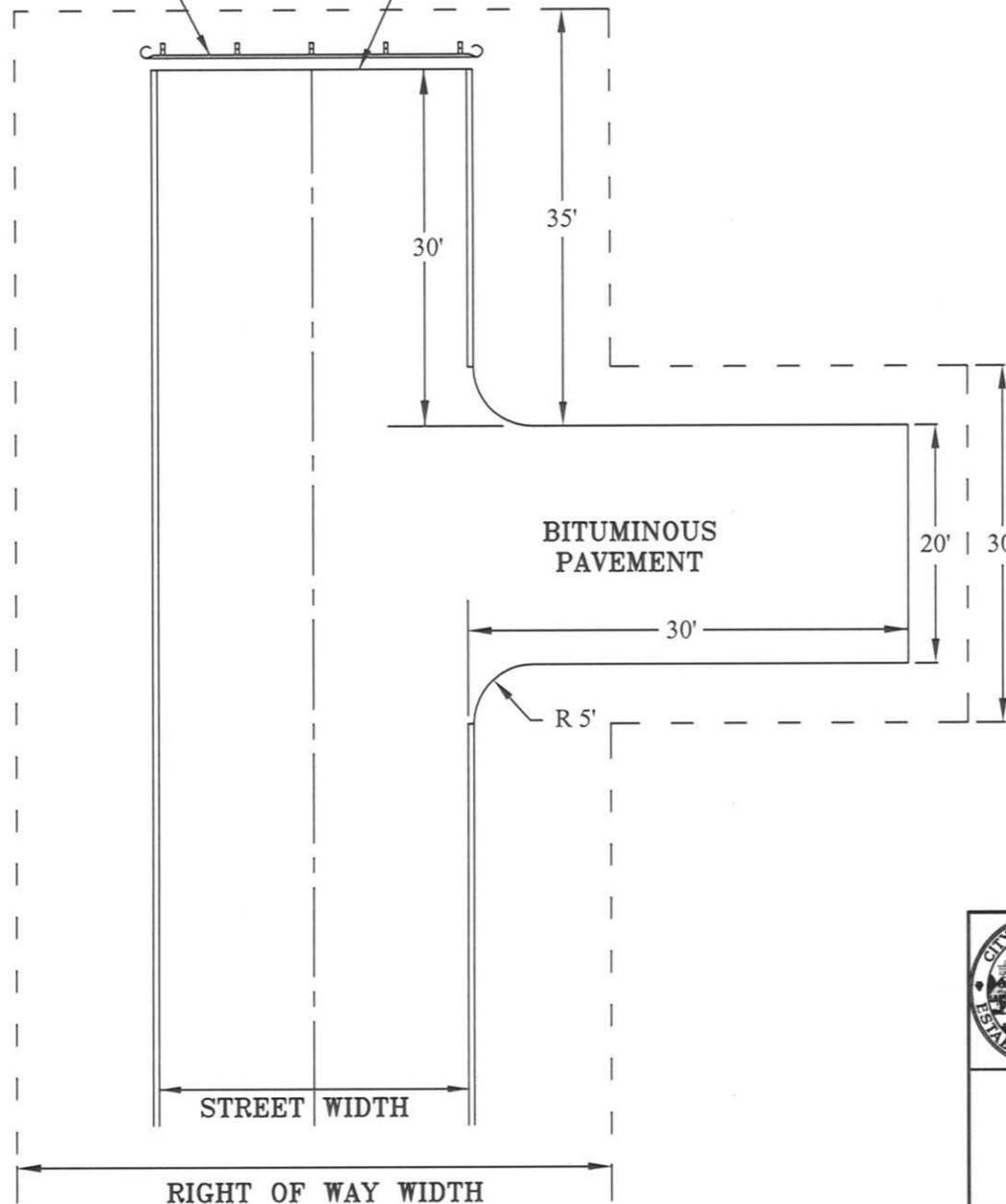
**J. Dostie**

FIGURE:

**3.6 B**

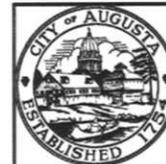
GUARDRAIL  
(MDOT TYPE 3B)

END OF STREET TO  
BE ACCEPTED



**NOTE:**

**EASEMENT FOR TEMPORARY  
TURNAROUND TO BE DEEDED TO  
THE CITY UPON ACCEPTANCE OF  
THE STREET. THE EASEMENT  
SHALL TERMINATE WHEN THE  
ROAD IS EXTENDED AND  
ACCEPTED.**



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Engineering Bureau

**TEMPORARY TURN-  
AROUND DETAIL**

DATE:

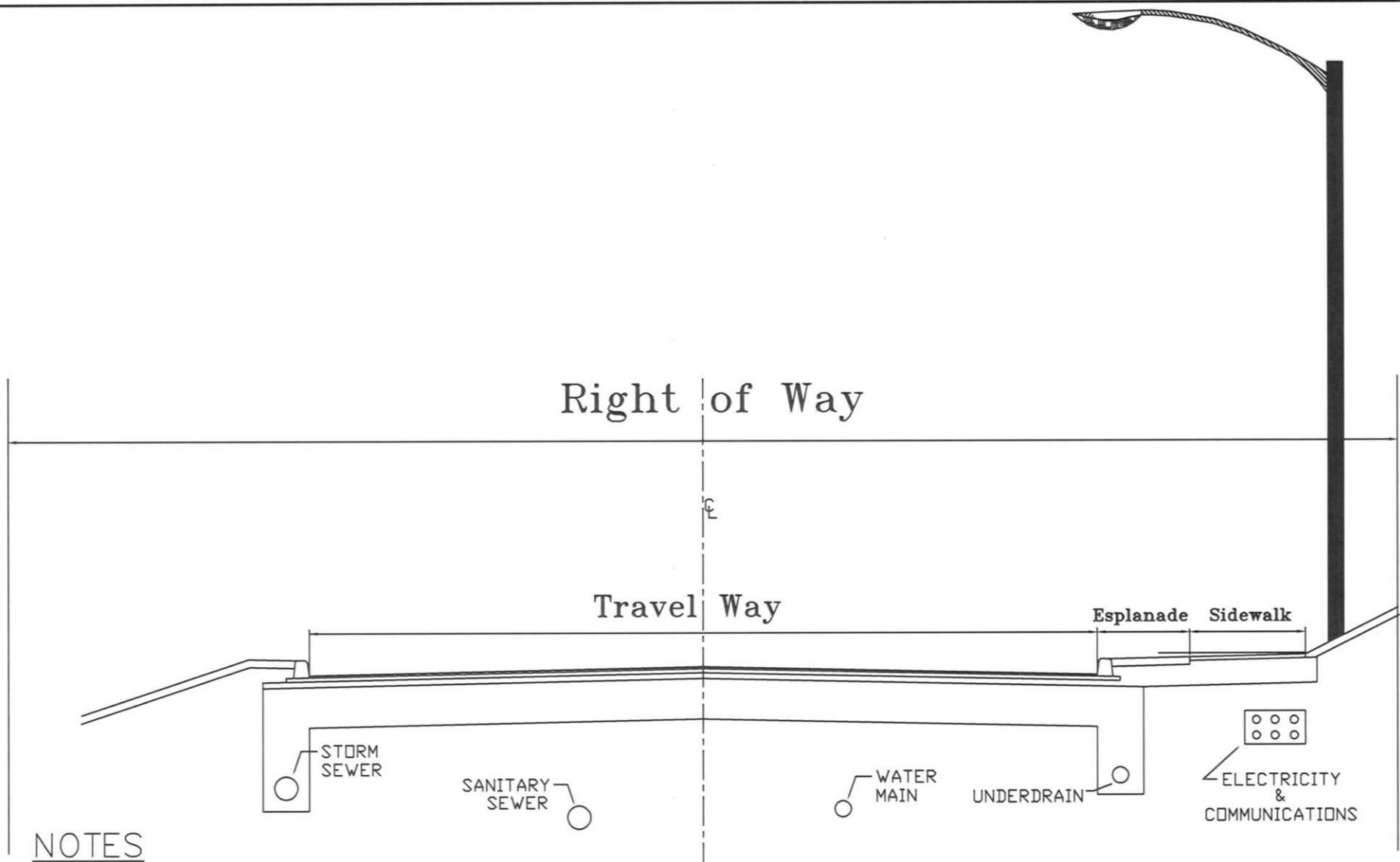
**Dec 2006**

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**J. Dostie**

FIGURE:

**3.7**



**NOTES**

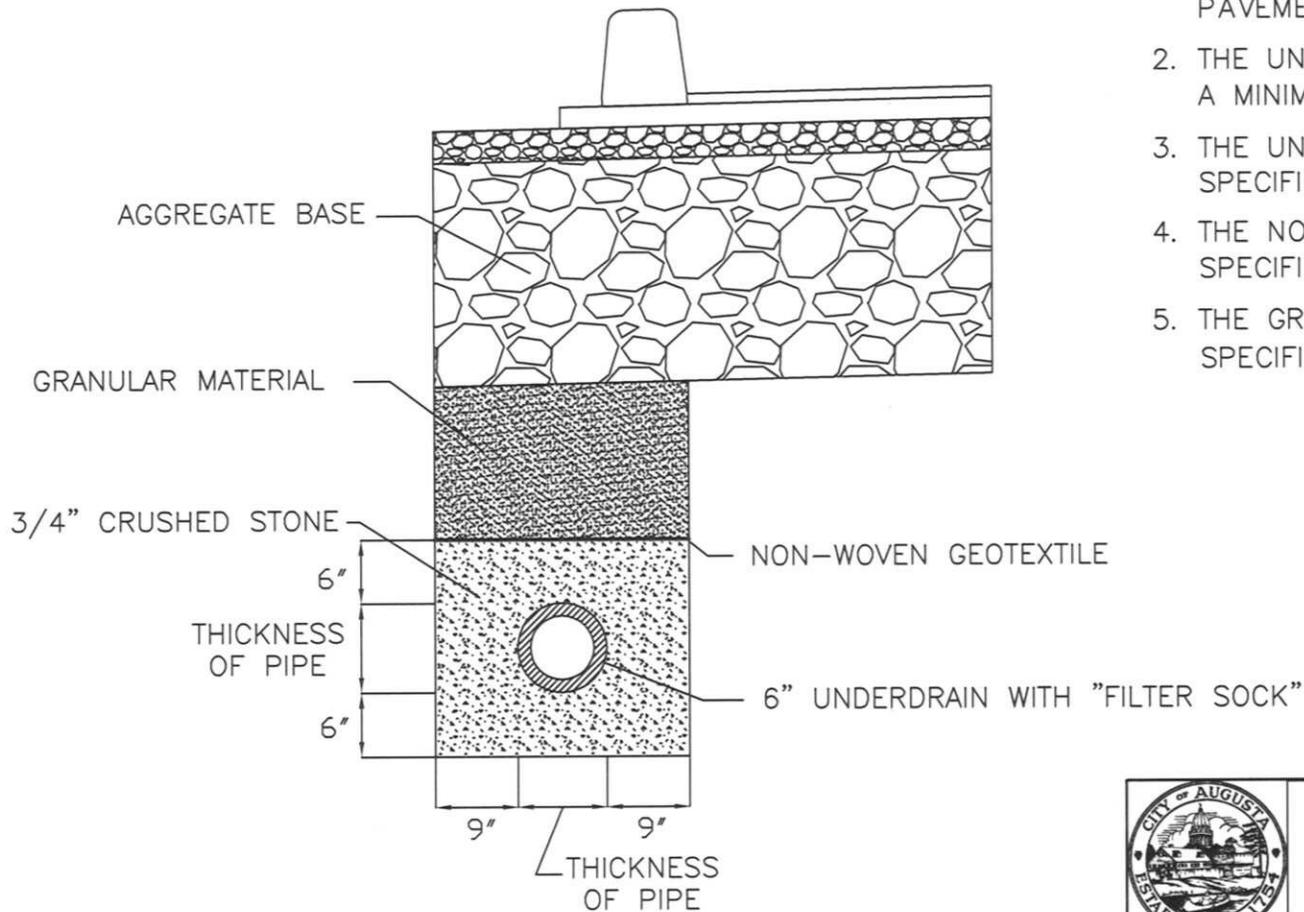
1. POWER AND COMMUNICATION CONDUITS SHALL BE PLACED UNDER THE SIDEWALK AREA AND SHALL BE INSTALLED IN ACCORDANCE WITH THE RULES AND REGULATIONS OF THE RESPECTIVE UTILITIES.
2. SANITARY AND STORM SEWERS SHALL BE INSTALLED IN ACCORDANCE WITH AUGUSTA SANITARY DISTRICT STANDARDS.
3. THE WATER MAIN SHALL BE INSTALLED IN ACCORDANCE WITH AUGUSTA WATER DISTRICT STANDARDS.
4. THE HORIZONTAL DISTANCE BETWEEN THE SEWER AND WATER MAINS SHALL BE A MINIMUM OF 10 FEET.
5. THE LOCATION OF THESE UTILITIES MAY BE CHANGED WITH THE APPROVAL OF THE CITY ENGINEER.



**City of Augusta  
Engineering Bureau**

**LOCATION OF  
UTILITIES**

|                          |                               |                       |
|--------------------------|-------------------------------|-----------------------|
| DATE:<br><b>Dec 2006</b> | DRAWN BY:<br><b>J. Dostie</b> | FIGURE:<br><b>3.8</b> |
|--------------------------|-------------------------------|-----------------------|



## NOTES

1. THE UNDERDRAIN SHALL BE INSTALLED WITH A MINIMUM OF 4 FEET OF COVER BETWEEN THE PAVEMENT AND THE TOP OF THE UNDERDRAIN.
2. THE UNDERDRAIN SHALL BE INSTALLED WITH A MINIMUM OF .5% SLOPE.
3. THE UNDERDRAIN PIPE SHALL MEET MDOT SPECIFICATIONS SECTION 706.06.
4. THE NONWOVEN GEOTEXTILE SHALL MEET MDOT SPECIFICATIONS SECTION 722.02.
5. THE GRANULAR MATERIAL SHALL MEET MDOT SPECIFICATIONS SECTION 703.22.



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Engineering Bureau

# UNDERDRAIN

DATE:

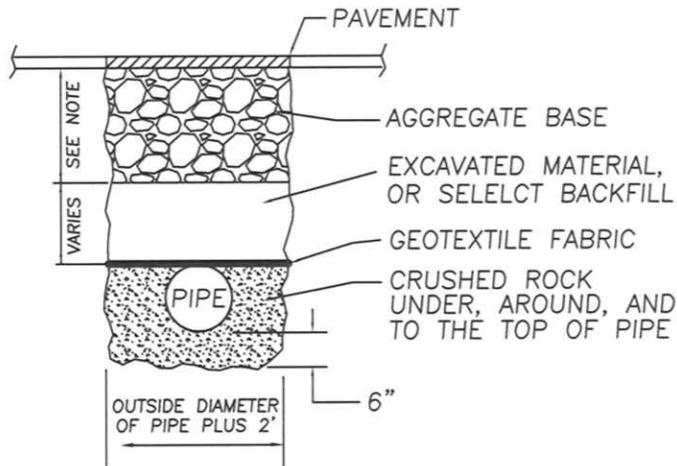
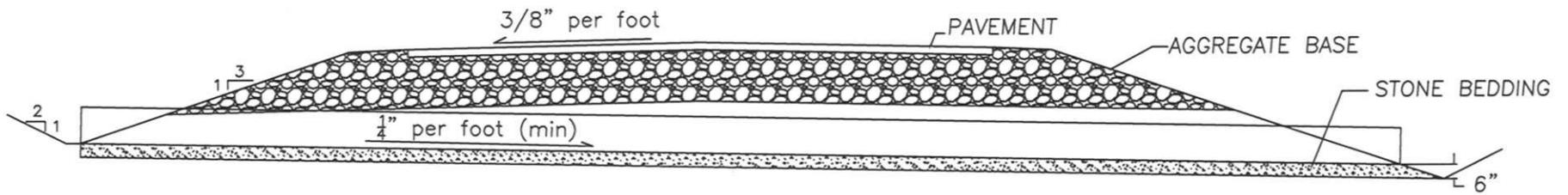
**Jan 2006**

DRAWN BY:

**J. Dostie**

FIGURE:

**3.9**



TYPICAL DRIVEWAY OR ROAD-  
WAY CROSS CULVERT SECTION

NOTES

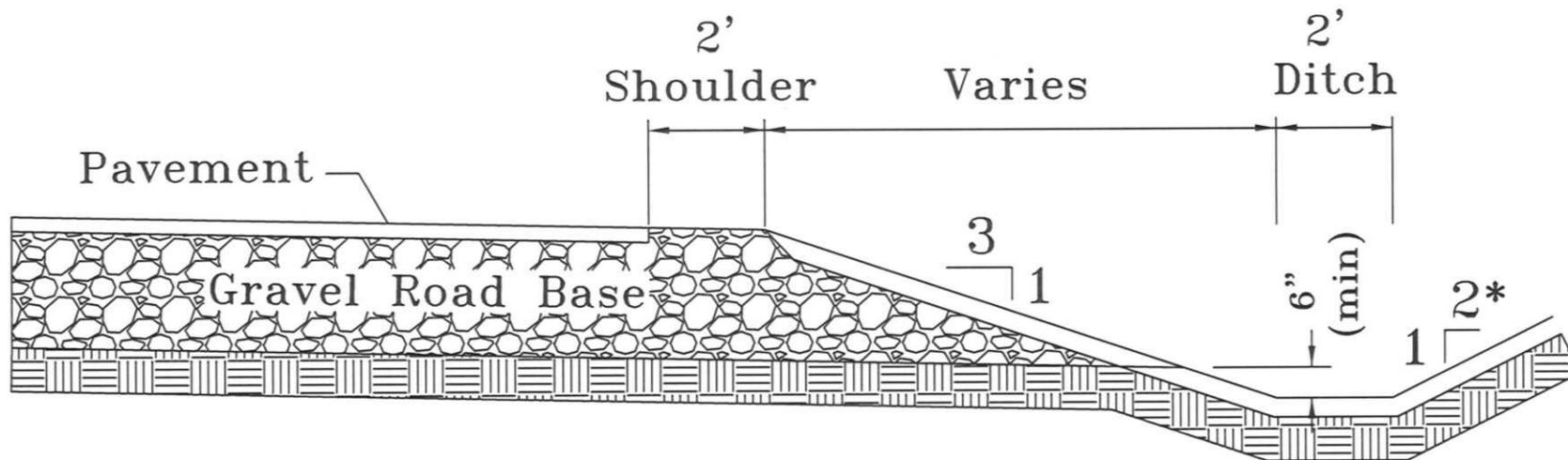
1. AGGREGATE BASE SHALL BE 24" FOR ROADWAYS AND 12" FOR DRIVEWAYS
2. MINIMUM COVER OVER CULVERTS SHALL BE 24" FOR CROSS CULVERTS AND 12" FOR DRIVEWAY CULVERTS
3. GEOTEXTILE FABRIC SHALL BE NON-WOVEN
4. BACKFILL SHALL BE COMPACTED TO 95% DENSITY
5. GRAVEL MAY BE SUBSTITUTED FOR CRUSHED STONE BEDDING FOR DRIVEWAY CULVERTS



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**CULVERT DETAIL**

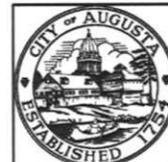
|                          |                               |                        |
|--------------------------|-------------------------------|------------------------|
| DATE:<br><b>Feb 2005</b> | DRAWN BY:<br><b>J. Dostie</b> | FIGURE:<br><b>3.10</b> |
|--------------------------|-------------------------------|------------------------|



\* Areas to be lawn shall have a back slope of 3 to 1 max

**NOTES:**

1. Slopes and ditches shall be loamed and seeded with a minimum of 4" of loam and then mulched.
2. Seed mixture shall be conservation mix.
3. Ditches shall have a slope of no less than 1.5%.
4. Erosion control methods shall adhere to Best Management Practices as set forth by the Maine Department of Environmental Protection.



City of Augusta  
Engineering Bureau

**ROADWAY DITCH**

DATE:

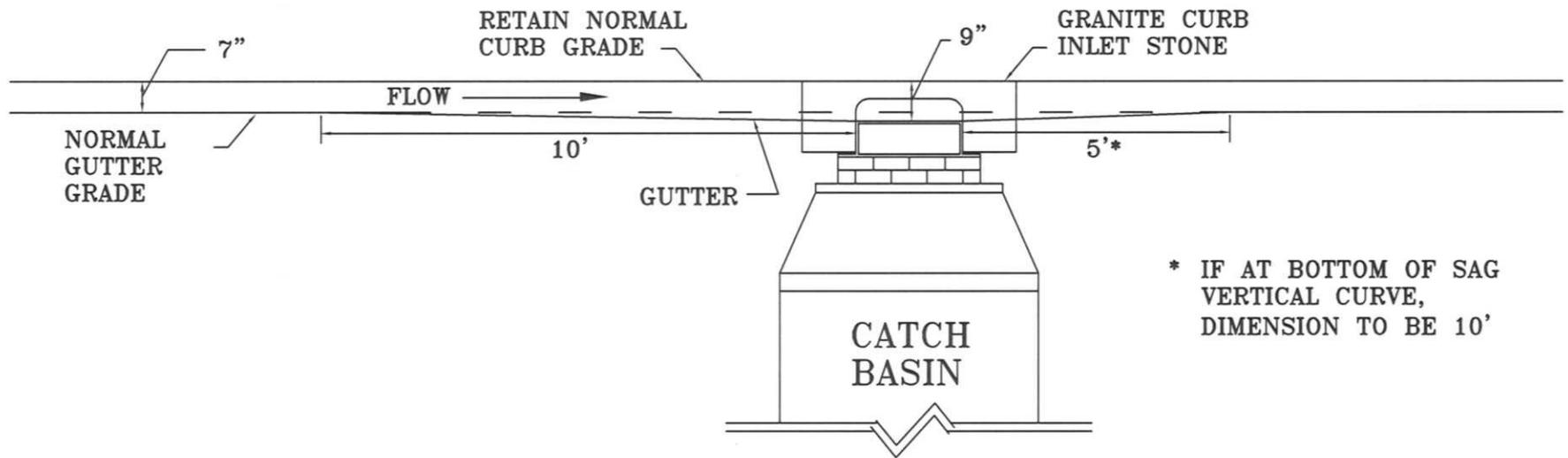
Feb 2005

DRAWN BY:

J. Dostie

FIGURE:

3.11



## NOTES

1. GRATES SHALL BE INSTALLED SO THAT THEY ARE DEPRESSED 2 " BELOW THE NORMAL GUTTER.
2. ALL CATCH BASIN MATERIALS AND INSTALLATION SHALL BE IN ACCORDANCE WITH AUGUSTA SANITARY DISTRICT STANDARDS.



City of Augusta  
Engineering Bureau

## GUTTER GRADE TRANSITION AT CATCH BASINS

DATE:

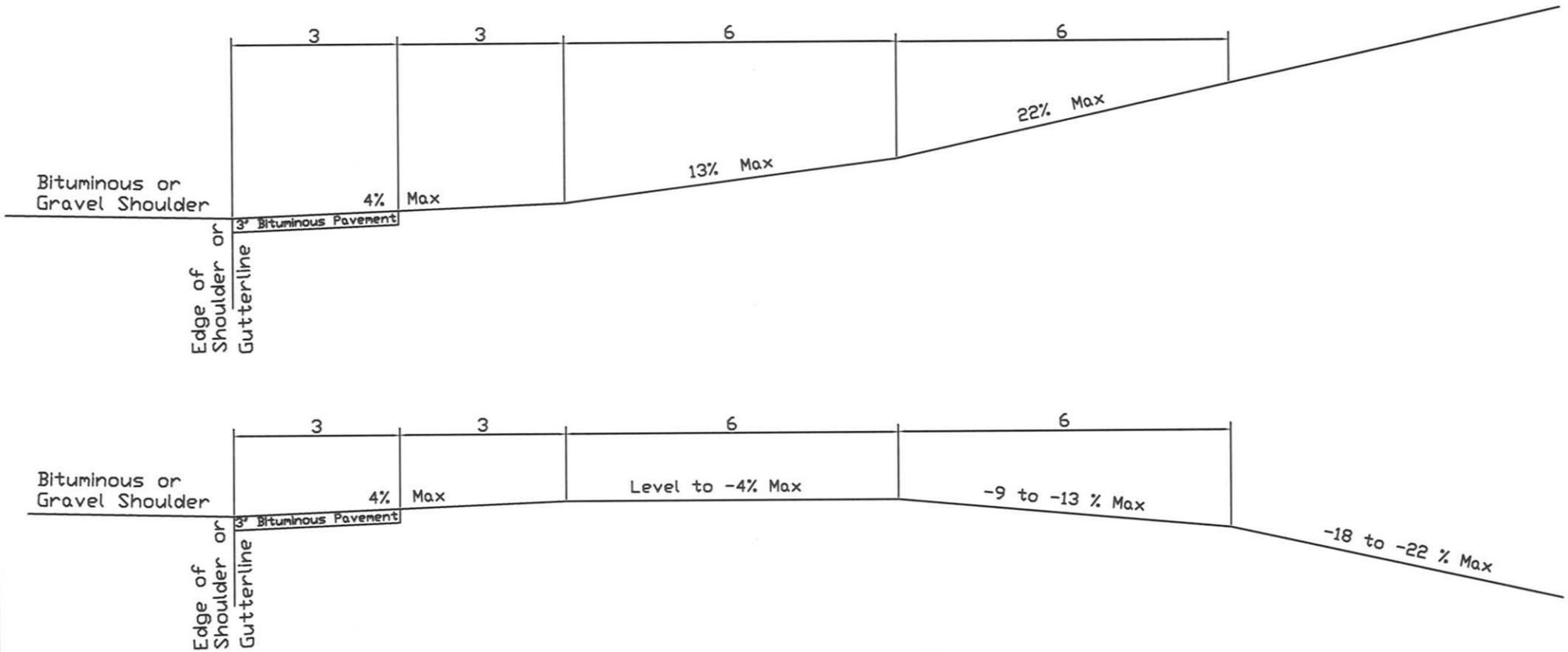
Feb 2005

DRAWN BY:

J. Dostie

FIGURE:

3.12



**NOTES:**

1. The first 3' shown as pavement shall be paved only when abutting a paved area
2. The pavement shall be extended to the back edge of the sidewalk where one exists.
3. Grade change shall not exceed 9% in a 6' increment of driveway length



City of Augusta  
Engineering Bureau

**TYPICAL DRIVEWAY  
MATCH**

DATE:

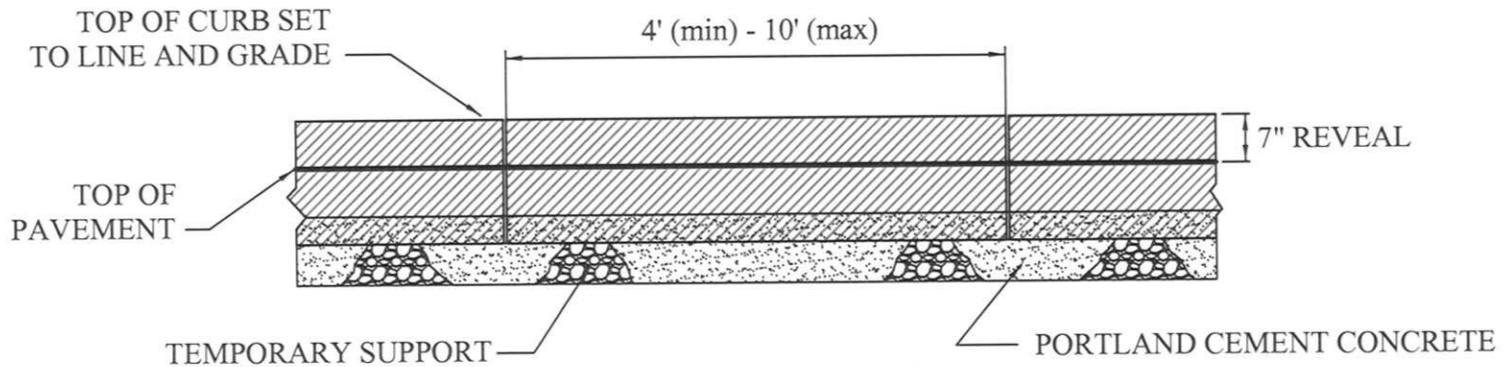
**Feb 2005**

DRAWN BY:

**J. Dostie**

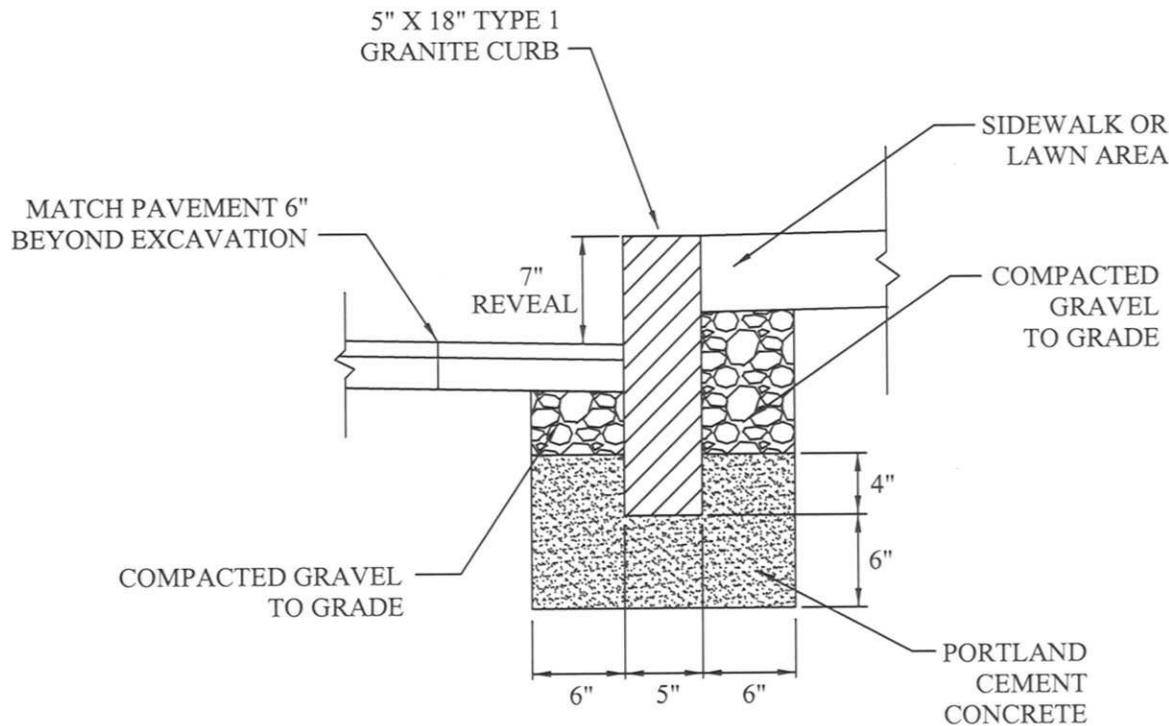
FIGURE:

**3.13**



## GRANITE CURB PROFILE

Not To Scale



## GRANITE CURB SECTION

Not To Scale

### NOTES

1. CURBS SHALL BE SET TO LINE AND GRADE UPON TEMPORARY SUPPORT PADS.
2. AFTER INSPECTION AND APPROVAL BY THE CITY ENGINEER, THE CURBS SHALL BE BACKFILLED WITH PORTLAND CEMENT CONCRETE AND ALLOWED TO CURE.
3. THE PORTLAND CEMENT CONCRETE SHALL CONSIST OF 2500 PSI CONCRETE.
4. ONCE THE CONCRETE HAS CURED, THEN THE CURB MAY BE BACKFILLED TO FINAL GRADE.
5. SPACING BETWEEN CURBS SHALL BE 1/4".
6. A STRIP OF GEOTEXTILE SHALL BE PLACED OVER THE CURB JOINT ON AT THE REAR OF THE CURB.



City of Augusta  
Engineering Bureau

## TYPE I GRANITE CURB DETAIL

DATE:

Feb 2005

DRAWN BY:

J. Dostie

FIGURE:

3.14

### 3.2.4 Street Design Based on Classification

1. The following design standards vary in accordance to the specified street classification.

| PUBLIC STREETS  |             |           |            |              | * PRIVATE ROADS         |
|---|-------------|-----------|------------|--------------|-------------------------|
| DESCRIPTION:  | LANE        | STREET    | COLLECTOR  | INDUS./COMM. | LANE STREET             |
| ADT   | 0 - 250     | 251-900   | 901 - 3000 |              | 0 - 250 251 - 900       |
| ROW WIDTH   | 50 FEET     | 60 FEET   | 60 FEET    | 60 FEET      | 50 FEET 50 FEET         |
| MINIMUM TRAVEL WAY WIDTH (a)                              | 20 FEET     | 26 FEET   | 34 FEET    | 32 FEET      | 18 FEET 22 FEET         |
| MINIMUM GRAVEL SHOULDER WIDTH (b)                         | 2 FEET      | 2 FEET    | N / A      | N / A        | 2 FEET 2 FEET           |
| MINIMUM SIDEWALK WIDTH (c)                                | 5 FEET      | 5 FEET    | 5 FEET     | 5 FEET       | 5 FEET (d) 5 FEET       |
| MINIMUM ESPLANADE WIDTHS                                  | 5 FEET      | 5 FEET    | 5 FEET     | 5 FEET       | N / A 5 FEET            |
| MINIMUM AGGREGATE SUBBASE                                 | 24 INCHES   | 24 INCHES | 24 INCHES  | 24 INCHES    | 18 INCHES 24 INCHES     |
| PAVEMENT SURFACE  | 3 INCHES    | 3 INCHES  | 4 INCHES   | 4 INCHES     | 3 INCHES (e) 3 INCHES   |
| ROADWAY CROWN   | 3/8 in/ft   | 3/8 in/ft | 3/8 in/ft  | 3/8 in/ft    | 3/8 in/ft 3/8 in/ft     |
| MINIMUM STREET GRADE                                      | 0.75%       | 0.75%     | 0.75%      | 0.75%        | 0.75% 0.75%             |
| MAXIMUM STREET GRADE                                      | 10%         | 10%       | 8%         | 8%           | 12% 10%                 |
| MAXIMUM STREET GRADE WITHIN 60 FEET OF EDGE OF TRAVEL WAY | +/- 4%      | +/- 3%    | +/- 3%     | +/- 3%       | +/- 4% +/- 3%           |
| MINIMUM ANGLE OF STREET INTERSECTION (f)                  | 75 deg.     | 75 deg.   | 75 deg.    | 75 deg.      | 75 deg. 75 deg.         |
| MINIMUM CENTERLINE RADIUS                                 | 75 FEET     | 100 FEET  | 175 FEET   | 230 FEET     | 75 FEET 100 FEET        |
| MINIMUM TANGENT BETWEEN REVERSE CURVES                    | 50 FEET     | 50 FEET   | 100 FEET   | 100 FEET     | 50 FEET 50 FEET         |
| MINIMUM CUL-DE-SAC RADIUS                                 | 50 FEET (g) | 50 FEET   | 56 FEET    | 60 FEET      | 50 FEET (g) 50 FEET (g) |
| MINIMUM CURB RADII AT INTERSECTIONS                       | 25 FEET     | 25 FEET   | 30 FEET    | 40 FEET (h)  | 25 FEET 25 FEET         |
| MINIMUM RIGHT OF WAY RADII AT INTERSECTIONS               | 20 FEET     | 20 FEET   | 20 FEET    | 30 FEET      | 20 FEET 20 FEET         |

2. Closed Drainage systems are required for all developments within the urban compact, designated growth, and Riggs Brook Village District areas. The Storm Water Board may grant waivers when it can be reasonably demonstrated that their absence will not adversely affect the surrounding environment, adjoining parcels, or public ways.

3. Letters in parenthesis in the chart above refer to the following notes:

- (a) The listed minimum travel way width does not permit on-street parking. Where on-street parking is proposed, an additional 8 feet of pavement is required.
- (b) Gravel shoulders required on residential streets with open drainage systems.
- (c) Sidewalks are required for all developments with the exceptions of those residential developments located in rural areas where the average lot frontage exceeds 200 feet, or on proposed private streets within urban areas if a sidewalk designed to City standards would have a distance greater than 400 feet, measured from the edge of the

pavement of the existing street to the closest dwelling structure, along a proposed private street that will join said existing street. Waivers may be granted when it can be reasonably demonstrated that the absence of sidewalks will not adversely affect pedestrian safety.

- (d) Raised (curbed) sidewalks for private lanes within the urban compact area, designated growth, and Riggs Village District areas are encouraged but not required.
- (e) Gravel surfaces may be substituted for pavement for private lanes constructed outside the urban compact.
- (f) Street intersection angles shall be as close to 90 degrees as feasible, but no less than the listed angle.
- (g) May be substituted with hammerheads or t-turn arounds.
- (h) Should be based on turning radii of expected commercial vehicles, but no less than 30 feet.

### **3.2.5 Street Lighting**

All public streets within the Urban Compact Area shall be illuminated according to the standards established by the City of Augusta Street Lighting Committee. Such lighting may consist of fixtures attached to utility poles or ornamental lighting. A street lighting plan shall be reviewed and approved by the City Engineering Bureau and Street Lighting Committee prior to installation.

### **3.2.6 Survey Control**

#### **1. Horizontal**

Monumentation of streets along the right-of-way shall include the following points:

- (a) Points of Curvature (PC's)
- (b) Points of Tangency (PT's)
- (c) Points of Compound Curvature (PCC's)

A minimum of two intervisible right-of-way monuments shall be tied into the Maine State Coordinate System, West Zone.

The Engineering Bureau will maintain an updated list of control stations located within the City of Augusta.

#### **2. Vertical**

- (a) All established elevations must be based on NGVD mean sea level datum and referenced from a specific bench mark.
- (b) A minimum of two right-of-way monuments within each development shall

be a bench mark monument with an established elevation.

- (c) Maximum distance between bench marks shall be 800' Horizontally, and 50' Vertically.
3. Survey control determination shall be to third order National Control Standards and Specifications, as outlined in publications prepared by the Federal Geodetic Control Committee, NOS, NOAA, by a Professional Land Surveyor licensed to practice in the State of Maine.
- (a) Survey shall be in accordance with the Maine State Board of Registration for Land Surveyors Standards, Category 1, Condition 2 or better.

### **3.2.7 Street Storm Water Design**

Stormwater runoff collection from streets and sidewalks shall be handled in accordance with the standards of the Greater Augusta Utility District and with Chapter 6 of this handbook.

Storm drainage systems must be designed in accordance with Greater Augusta Utility District ***standards for a 10-year storm for residential lanes and streets*** and a 25 year storm for a collector, commercial/industrial, or arterial street.

### **3.2.8 Handicap Accessibility**

All public portions of any development shall be handicap accessible in accordance with current laws or regulations.

### **3.2.9 Sidewalks**

Unless other pedestrian accommodations are made, all developments shall provide for a sidewalk on at least one (1) side of the street.

Sidewalks may be provided, but shall not be required where lot frontages in residential developments located in rural areas are an average of 200 feet or greater.

Waivers may be granted when it can be reasonably demonstrated that the absence of sidewalks will not adversely affect pedestrian safety.

### **3.2.10 Esplanades**

There shall be an esplanade located between the curb and sidewalk in all developments with the exception of private lanes. Esplanades shall be planted with grass and may be planted with trees, with the approval of the City Engineer and City

Arborist.

### **3.2.11 Guardrails**

Guardrails shall be used in any locations where street embankments exceed 3 to 1 or thirty three percent (33%) (Downslopes only). Street intersections which form a "T " shall have a reflective guardrail opposite the street which terminates at the intersection. Maine Department of Transportation Specifications shall be used.

The face of any guardrail shall be aligned so as not to reduce the width requirement of any section feature (such as shoulder width, sidewalk width, etc.). This will require an additional width (usually 2 feet) to allow for the guard rail. Guardrail can be any suitable device designed for the purpose that meets AASHTO or MDOT standards. Other systems such as ornamental stones (ie. Acadia) must be approved by the City Engineer.

# CHAPTER 4

## STREET CONSTRUCTION SPECIFICATIONS

The following standards and specifications shall apply to all new street construction within the City of Augusta. Whenever the Maine Department of Transportation specification is required, it shall mean the latest revised specification as most recently published.

### 4.1 Utility Installations

All underground utilities shall be installed in conformance with the standards and specifications as set forth by the district or company regulating the utility. Proper horizontal and vertical control for the installation of the utilities shall be maintained to insure that they are installed in conformance with the locations shown on the plans.

For new street construction, underground building sewer, water, power, telephone, cable television, conduits for utilities, foundation drains or other storm drain line service connections shall be installed to the right-of-way line prior to paving. See Figure 3.8 Section 3.2.3 - Location of Utilities.

### 4.2 Construction Preparation

1. Before any clearing in the right of way is to begin, the clearing limits are to be plainly marked at 50' intervals, or as necessary to delineate such limits.
2. Before any fill or cut operation is started, the entire right-of-way shall be cleared of all stumps, roots, brush, and other objectionable material. All ledge, large boulders, and tree stumps shall be removed from the right-of-way or as shown on the plans.

### 4.3 Subgrade

1. All organic materials shall be removed to a depth of two (2) feet below the subgrade of the roadway. Rocks and boulders visible at subgrade and exceeding six (6) inches in size shall also be removed. Subsoils which have been identified by the City Engineer as not suitable for roadways shall be removed from the street site to a depth of two (2) feet below the subgrade and replaced with material meeting the specifications for gravel aggregate subbase as noted below.

2. As an alternative, the City Engineer may approve the use of a geotextile fabric which meets the Maine Department of Transportation's Specification under Sections 620 and 722 "Stabilization Geotextile."
3. Except in a ledge cut or for bridge approaches, back slopes shall be no steeper than a slope of two (2) feet horizontal to one (1) foot vertical, and shall be graded, loamed, limed, fertilized, and seeded according to the specifications of the erosion and sedimentation control plan. Where a cut results in exposed ledge or in cases such as bridge approaches, a back slope no steeper than four (4) feet vertical to one (1) foot horizontal is permitted. There shall be a snow shelf provided in ledge cut areas with a minimum width of six (6) feet behind the curb.
4. The subgrade is to be shaped to drain. No irregularities which cause water to be trapped will be allowed.

#### **4.4 Aggregate Base And Sub-base**

1. Base

The base and sub-base courses must drain to a ditch or to underdrain. The depth of the sub base course on a granular material subgrade may be reduced to a total of 18", subject to the approval of the City Engineer.

The Aggregate Base Course shall be sand or gravel of hard durable particles free from vegetative matter, lumps or balls of clay and other unsuitable substances. The gradation of the part that passes a three (3) inch square mesh sieve shall meet the following grading requirements.

| <b><i>M.D.O.T. TYPE "A"</i></b>                   |                           |
|---|---------------------------|
| <b><i>Percentage by Weight Passing Square</i></b> |                           |
| <b><i>Sieve Designation</i></b>                   | <b><i>Mesh Sieves</i></b> |
| <b><i>½ inch</i></b>                              | <b><i>45 – 70%</i></b>    |
| <b><i>¼ inch</i></b>                              | <b><i>30 - 55%</i></b>    |
| <b><i>No. 40</i></b>                              | <b><i>0 – 20%</i></b>     |
| <b><i>No. 200</i></b>                             | <b><i>0 – 5%</i></b>      |

***Type "A" aggregate for the base shall contain no particles of rock exceeding two (2) inches in any dimension.***

2. Sub-Base

The Aggregate for Sub-Base course shall be sand or gravel of hard durable particles free from vegetative matter, lumps or balls of clay and other unsuitable substances. The gradation of the part that passes a three (3) inch square mesh sieve shall meet the following grading requirements

| <b><i>M.D.O.T. TYPE "D"</i></b>                   |                           |
|---|---------------------------|
| <b><i>Percentage by Weight Passing Square</i></b> |                           |
| <b><i>Sieve Designation</i></b>                   | <b><i>Mesh Sieves</i></b> |
| <b><i>1/4 inch</i></b>                            | <b><i>25 – 70%</i></b>    |
| <b><i>No. 40</i></b>                              | <b><i>0 – 30%</i></b>     |
| <b><i>No. 200</i></b>                             | <b><i>0 – 7%</i></b>      |

***Type "D" aggregate for the sub-base shall contain no particles of rock exceeding six (6) inches in any dimension.***

3. Sieve analysis.

Copies of the sieve analysis results of the samples of base and subbase aggregate to be used shall be submitted to the City Engineer for review no later than one week before the placement of any gravel in the street.

4. Placement.

Gravel shall be placed and compacted in accordance with Maine Department of Transportation's Standard Specifications, Section 304.03 "Placing".

5. Compaction tests.

Compaction tests shall be taken at locations along the road as specified by the City Engineer. All costs associated with the compaction tests shall be paid for by the developer. No pavement shall be placed until the compaction tests have been reviewed and approved by the City Engineer.

## **4.5 Street And Sidewalk Pavement**

(a) Streets.

Binder course shall be hot mix asphalt Type B and the finish course shall be hot mix asphalt Type C pavement.

Hot bituminous pavement materials and placement for streets shall be in

accordance with the Maine Department of Transportation's Specifications division 400 – “Pavements”

(b) Sidewalks.

Sidewalks shall be constructed in conformance with the Maine Department of Transportation's Specification 608.04 "Hot Bituminous Sidewalk". (See typical street section for base and pavement design; Figures 3.1 through 3.6; Street Design Standards, Section 3.2.3)

## **4.6 Curbing**

Granite curb, bituminous curb, and stone edging (Type 1, Type 3, and Type 5 respectively) shall conform to the Maine Department of Transportation's Specifications for Curbing under Section 609. Backfill material for type 1 curb shall be Portland Cement Concrete (see Type1 curb detail figure 14 section 3.2.3)

Islands located within rights-of-way and at the center of the cul-de-sac shall be curbed with type 5 curbing.

All intersection radii shall be curbed with Type 1 circular vertical curbing.

Granite curb shall be required for all public improvements in the Capital Commerce Districts as defined in the City of Augusta Land Use Ordinance.

## **4.7 Culverts**

Any culverts installed in the roadway to handle cross drainage shall be HDPE (high density polyethylene) pipe such as ADS N-12 or equal. Minimum cover over pipes shall be twenty-four (24) inches, and the pipe shall be installed on a bed of crushed stone a minimum of six (6) inches in depth. Backfill around the pipe shall consist of crushed stone to the top of the pipe. The backfill material for from the top of the pipe shall meet the standards for type “D” gravel, aggregate sub-base. (see culvert detail figure 10, section 3.2.3) Backfill shall be compacted in six (6) inch lifts to a density of ninety-five (95) percent, modified proctor test. Culverts are to be designed to meet AASHTO HS20 loading requirements, and to handle the storm requirement of any governing approval agency. Other agencies may require permits for crossing streams, wetlands, etc.

## **4.8 Street Development Plans**

Plans for street construction shall be designed by a State of Maine registered Professional Engineer, who shall stamp and sign all plans submitted to the City for

review and/or approval. The right-of-way plan showing monuments shall be sealed by a State of Maine Registered Professional Land Surveyor. The plans shall contain the following:

1. Plan view.

The plan view shall be plotted on a 24" x 36" sheet size and shall include all of the following:

- (a) Centerline with stationing at 50 and 100 foot stations,
- (b) horizontal control points such as point of curvature, point of tangency, point of reversal curvature, point of curvature on a curve with stations and curve data,
- (c) radius points for intersection and cul-de-sacs with station and offset locations,
- (d) proposed street name,
- (e) all utilities (storm water, sewer and water mains, under drain, hydrants, power and or telephone pole locations, etc.)
- (f) catch basin and/or culvert locations,
- (g) curb and sidewalk lines,
- (h) right-of-way and easement lines,
- (i) proposed monuments,
- (j) any proposed entrance locations,
- (k) outstanding physical features (such as brooks, streams, or gullies affected by the street),
- (l) north arrow,
- (m) bench mark locations and
- (n) descriptions with reference to datum, matchlines, lot numbers, and any other information pertinent to the project.

2. Profile.

The profile shall include

- (a) both existing and proposed grade, vertical control points such as P.V.C., P.V.T., and P.V.I. with stations and elevations listed,
- (b) design slopes,
- (c) vertical curve lengths,
- (d) 50 and 100 foot stations with existing and proposed grades,
- (e) scale,
- (f) grid line elevations in right and left hand margins,
- (g) catch basin/culvert locations and elevations,
- (h) any other information pertinent to the project.

3. Cross-sections.

Cross sections shall include

- (a) both existing and proposed grade,
- (b) centerline station and elevation,
- (c) sideslopes,
- (d) right-of-way lines,
- (e) scale,
- (f) grid line elevations at right and left of each section, and
- (g) any other information pertinent to the project.

Cross-sections shall be shown at least at every 50 foot station.

4. Scale.

The scale of the plan and profile sheets shall be:

- (a) 1" = 20' or 1" = 40' horizontal; and

(b) 1" = 2', 1" = 4', or 1" = 5' vertical.

A scale of 1" = 50' horizontal may be used with the approval of the City Engineer.

Cross Sections shall be drawn with the same scales as used on the plan and profile sheets. The following scales are permitted: 1"=2', 1"=4, or 1"=5" (1"=10' is not allowed).

The scale shall be clearly marked on the plan and shall be in written and bar scale form. Sheet size shall be 24" x 36" and grid, if used, shall be 10 squares to the inch.

#### 5. Contours.

The detail sheet shall include a separate contour plan showing existing grades at a contour interval of two (2) feet minimum; the road layout and centerline stationing shall also be shown. The origin (from what data) of the depicted contours shall be indicated on the plan.

#### 6. Details.

The detail sheets shall include, but not be limited to, the following information:

- (a) Typical cross section
- (b) Typical trench sections (storm, water, sewer, and under drains)
- (c) Typical culvert trench sections
- (d) Handicap wheelchair detail,
- (e) Sedimentation and erosion control details,
- (f) Curb type detail.
- (g) catch basin rim installation details, and
- (h) any related site improvement details.

Separate intersection details (including cul-de-sacs and temporary turnarounds) shall be shown at a scale of one inch equals ten feet (1" = 10'). These plans shall detail drainage design for these areas and may require several spot elevations to clearly explain construction details.

# CHAPTER 5

## TRAFFIC CONTROL STANDARDS

### 5.1 Traffic/Parking Study Required

The City of Augusta Land Use Ordinance, Section 300-517, Traffic Impact Analysis Standards sets the threshold for determining when a traffic/parking study is required. The traffic generation calculation will be performed by the developer's engineer using data contained in the 2003 edition (or current edition) of the

Institute of Transportation Engineers Trip Generation Handbook,

which is on file in the City of Augusta Engineering Bureau. A parking assessment may be requested when the proposed development can be expected to have a total parking demand of thirty (30) spaces or more as determined by values contained in the 1985 (or current edition) of the

Institute of Transportation Engineers Handbook titled Parking Generation,

which is also on file in the City of Augusta Engineering Bureau. The developer will be required to retain a State of Maine Registered Professional Engineer, specializing in traffic/transportation engineering, to complete any necessary studies. All issues and questions raised by the City will be adequately responded to as determined by the City Engineer. The City Engineer may request a traffic study even if the increase is less than thirty five (35) new vehicle trips, if it is determined by the City Engineer that one is warranted.

### 5.2 Traffic Impact Standards

Vehicular access to developments shall be from streets or roads that have adequate capacity to accommodate the additional traffic generated by the development. Level of service after development at intersections on major access routes to the development and at the intersection of any development access drive or proposed street shall be at a minimum at pre-development levels of service. Developer shall mitigate development impacts that result in reduced level of service.

For development that will result in a reduction in level of service, the level of service restriction may be lowered by the City Engineer after consultation with the Maine Department of Transportation (if applicable) and upon written recommendation from

the Director of Development Services, the Public Works Director, and the Chief of Police. At a minimum, recommendations shall be based upon adopted goals and policies and capital improvement plans.

The City Engineer may waive and/or modify any of the requirements of this section if the Developer's certified traffic engineer can demonstrate that they are not necessary because of size, type, or location of the development and/or because other traffic impact analysis methods or procedures are equally effective.

### **5.3 Procedure for Conducting Traffic Impact Analysis**

#### **1. Inventory Existing and Proposed Land Use**

- (a) Existing Land Use: Site location and setting are important in determining the potential impacts of development on a given site. The site description shall include the following:
  - i. Exact physical location of the proposed development.
  - ii. Physical characteristics such as land configuration, unique features, water bodies, trees, developable acres, and topography.
  - iii. Existing land uses including zoning, and land use classification.
  - iv. Land uses of adjacent property.
- (b) Proposed Land Use: Adopted comprehensive plans, community development plans, long-range plans, or similar documents shall be reviewed when inventorying proposed land uses. This will provide an indication of the type and direction of future development that is generally acceptable to the community and that may be facilitated by community facilities such as streets, sewers, and water lines. Quantification of trip generation shall also be developed.

#### **2. Inventory Existing and Proposed Transportation System**

- (a) Existing Transportation System: An understanding of the nature and function of the existing and proposed transportation system in the area near a proposed development site is essential for predicting traffic patterns, performing the traffic analysis, and developing necessary improvement alternatives. The following information shall be provided:
  - i. Current and proposed street network, including functional classification, route jurisdiction, and the number of moving traffic lanes.

- ii. Geometrics and characteristics, especially at critical intersections, including such items as curb parking and potential street improvements.
- iii. Intersection traffic control.
- iv. Signal timing and system operation at signalized intersections.
- v. Existing or proposed intersection and development access points and configurations.
- vi. Existing and proposed rights-of-way.
- vii. Transit routes/headways.
- viii. Transit stops/station locations.
- ix. Available hourly traffic counts.
- x. Peak period turning movements at critical intersections.
- xi. Accident information.

(b) Proposed Transportation System

- i. Comprehensive transportation plan.
- ii. Future improvements, committed and planned.

3. Forecasted Nonsite Traffic Volumes

Nonsite traffic consists of through traffic volumes, having neither an origin nor a destination in the vicinity of the development, and traffic generated by developments adjacent to and affected by, or having an impact on, the proposed development. Methods used to determine nonsite traffic volumes shall include use of the following:

- (a) Comprehensive transportation plan or related data projections; check land use and socioeconomic information.
- (b) Typical annual growth rates; provide sufficient historic volume information

and develop factors to apply to existing counts.

(c) Known site-specific development in planning/construction phases.

#### 4. Site Related Traffic

(a) Divide activities associated with development into components.

(b) Identify trip generation units of measure and rates for components.

(c) Estimate development-generated units of measure and rates for components.

(d) Identify the critical hours of analysis such as the adjacent street morning and evening peak hours and/or the proposed development peak hour of activity.

(e) Trip distribution: The trips generated shall then be distributed to the transportation system on the basis of land use, population or employment, distance, accessibility, and any local factors affecting distribution. The distribution should reflect conditions for the analysis year, and the methodology should be well documented.

(f) Modal split: If the magnitude of the development is significant, a determination of the mode of travel may be necessary. The determination of trips generated is most likely in terms of vehicle trips; therefore, an assessment of vehicle occupancy shall be performed to convert vehicle-trips to person- trips. Then, the alternative modes of travel shall be analyzed as to their attractiveness to development-generated traffic.

(g) Trip assignments: Trip for various transportation modes shall be assigned to existing and proposed transportation networks based on available system capacity, convenience, and other relevant criteria. Traffic assignments shall reflect logical routing and realistic roadway capacity potential.

#### 5. Traffic Analysis

(a) Combine nonsite and site-related traffic (i.e. the traffic volumes for the various stages of the proposed development and the determined analysis periods - morning, evening, and/or development peak hours, estimated in previous steps, in order to obtain estimates of total projected traffic volumes).

(b) Capacity analyses shall be conducted for all critical intersections and access points during peak traffic periods. Critical intersections usually fall into the following categories:

- i. All major intersections within a certain distance of the development as agreed to by the City Engineer.
  - ii. All affected intersections where development traffic would increase the volume to a level that would warrant improvements.
  - iii. All affected intersections that operate or would, after development, operate below design levels of service.
- (c) The results of the capacity analyses shall be used to identify street and road segments and intersections near the development that are or will, after development, be deficient in capacity; and to identify safety-related constraints.

## 6. Street/Road and Access Improvements

The previous information is then used to identify and evaluate improvements that can be made to maintain acceptable levels of service and to help decision-makers to determine whether the impact of the proposed development on the surrounding area is acceptable. Level of Service D shall be considered appropriate for urban design unless otherwise indicated by the City Engineer.

The following elements shall be addressed as applicable:

- (a) External Street/Road System Improvements
  - i. New street/roads, lanes.
  - ii. New or modified interchanges.
  - iii. Additional through lanes.
  - iv. Review of design vehicle requirements.
  - v. Turn lanes (including storage lengths).
  - vi. Acceleration/deceleration and bypass lanes
  - vii. New signals
  - viii. Modification of existing signals

- (b) Internal Street System
  - i. Review of design vehicle requirements.
  - ii. Lane requirements.
  - iii. Traffic control.
  - iv. Driveway design.
  
- (c) Evaluation of Improvements
  - i. Impact on operating characteristics.
  - ii. Cost.

#### **5.4 Driveway and Access Control Standards**

1. No permit for a permanent street curb opening in a residential district shall be issued for a use which is not listed as a permitted use or a conditional use in that district. Residential districts are outlined in the City of Augusta Land Use Ordinance.
2. The City Engineer is authorized and directed to determine locations and widths for driveways in the city in accordance with the standards specified herein.
3. All new surface for curb cuts or driveway openings within the right-of-way will be bituminous hot top, and such work shall extend to the rear of the sidewalk line only. Openings in curbed sections of roadways not adjacent to sidewalks shall be paved and shall extend three 3' from the gutter line (see typical driveway match, figure 3.13 section 3.2.3) All costs for such cuts shall be borne by the property owner and, if the city does the work will be paid in advance on a per foot basis as approved by the City Council, and stated in Chapter 6, City of Augusta Code of Ordinances, Chapter 300 – Land Use Ordinance, Part 6 – Administration, as amended.
4. Drainage - see Storm Water Runoff Control Standards - Section 6.1
5. Single and Two Family (up to 4 parking spaces)
  - (a) Minimum/maximum driveway width: Any site shall have a minimum twelve (12) foot driveway; a maximum twenty four foot (24') driveway shall be

allowed.

- (b) Location of driveway: Wherever possible, driveways shall be located on the lot in a manner to provide a minimum twenty (20) foot spacing between existing or proposed driveways.

Note: Refer to "Guidelines for Driveway Design and Location, " Institute of Transportation Engineers, 1985, for additional design guidelines.

- (c) Number of Driveways: One driveway per street frontage. A second driveway will only be allowed if it can be shown that the driveway is necessary and will be used on a limited basis.

6. Commercial, Industrial and Multi-Family (3 units or more)

- (a) Minimum/maximum driveway width (one-way): Any site with driveway access to a street shall have a minimum fifteen (15) foot wide driveway for one-way ingress or egress. Driveways shall permit traffic to enter and leave the site simultaneously without conflict in aisles, parking or maneuvering areas. Both the entrance and exit drives shall be marked with appropriate signage. Maximum driveway width shall not exceed twenty-four (24) feet.
- (b) Minimum/maximum driveway width (two-way): Any site with driveway access to a street shall have a minimum 24-foot wide and maximum 35-foot wide driveway for two-way ingress and egress.
- (c) Curbing of driveways: Where driveways enter on an existing street, the full radius of the driveway shall be curbed if necessary. The radius shall be a minimum of 15 feet; and, where truck traffic is anticipated, the radius may be increased up to a maximum of a 25 feet based on the turning radius of the vehicles anticipated to enter and exit the site.

If curb cuts or culverts are required they will be as approved by the City Engineer, and installed by Augusta Public Works Department at the developer's cost.

- (d) Maneuvering: The area within the site to which a driveway provides access shall be of sufficient size to allow all necessary functions for loading, unloading and parking maneuvers to be carried out on the site and completely off the street right-of-way.
- (e) Location and spacing of driveways: The location and spacing of driveways shall be determined as follows:
  - i. Along local streets, access driveways to corner lots shall be located a

minimum of thirty-five (35) feet from the intersection of the projection of right-of-way lines to the centerline of the driveway, except as provided hereinafter.

- ii. Along arterial, collector and industrial streets, access driveways to corner lots shall be located a minimum of one hundred fifty (150) feet from the intersection of the projection of right-of-way lines to the center line of the driveway except as provided hereinafter.
- iii. Along arterial, collector and industrial streets, minimum acceptable spacing between double or multiple driveways shall meet the following criteria:

| <b><i>Speed Limit (mph)</i></b> | <b><i>Minimum Separation (feet)</i></b> |
|---------------------------------|---|
| <b>30</b>                       | <b>125</b>                              |
| <b>35</b>                       | <b>150</b>                              |
| <b>40</b>                       | <b>185</b>                              |
| <b>45</b>                       | <b>230</b>                              |

*Distances between adjacent one-way driveways with the ingress drive separated from the egress drive may be one-half the distance shown above.*

- iv. Driveways shall be located in the most appropriate location, based on the existing and proposed adjacent and opposing driveways and land use.
- (f) Number of driveways:
- i. One (1) one-way driveway shall be permitted for ingress and one (1) for egress purposes to any development per street frontage. These may be combined at one location.
  - ii. A joint access roadway shall be considered as adequate access for any two (2) adjacent sites and shall be encouraged.
- (g) Off-street vehicular circulation: An off-street facility shall have full internal vehicular circulation and storage. Vehicle circulation shall be completely contained within the facility, and vehicles located within one portion of the facility shall have access to all other portions without using the adjacent street system.
- (h) Off-street truck maneuvering: Where the use of a parcel includes truck loading, parking or service facilities, adequate space shall be provided such that all truck maneuvering is performed off the street. Design truck shall be

one most appropriate for the operation.

7. Ingress Lanes (Slip Lanes)

(a) Ingress left-turn lane requirements: A twelve (12) foot wide left-turn lane with appropriate storage and transition, based on the Institute of Traffic Engineers accepted standards, shall be provided at each driveway where the peak hour inbound left-turn volume is thirty (30) vehicles or more.

(b) Ingress right-turn lanes: For any site, a twelve (12) foot wide right-turn lane with appropriate storage and transition, based on the Institute of Traffic Engineers accepted standards, shall be provided at each driveway where the highway average daily traffic exceeds 10,000 vehicles per day, permitted highway speeds exceed 35 miles per hour, and driveway volume exceeds 1,000 vehicles per day with at least forty (40) right-turn movements during peak periods. For any site, a right-turn lane as described in this subparagraph shall be provided at each driveway where right-turn ingress volumes exceed seventy-five (75) vehicles per peak hour.

8. Maximum Length of Driveway - In Shoreland Zones only: The maximum length of a driveway, within the area zoned for shoreland protection, shall be 500'.

9. Maximum Grade of Driveway Abutting Public Right of Way. For private driveways accessing dwellings, the driveways shall be constructed in accordance with Figure 3.13 Section 3.2.3.

### 5.5 Sight Distance Standards

Where driveways or roadways are proposed to enter onto an existing street, vehicular sight-distance shall conform to the recommended sight distance listed below, and shall not be less than the minimum sight distance standard. The minimum sight distance standards are taken from table 5-4, page 127 of the Institute of Transportation Engineers Handbook titled Transportation and Land Development, which is on file in the City Services Engineering Bureau. Vehicular sight distance shall be calculated with the height of eye at 3.5 feet and the height of an object at 3.5 feet.

| <b><i>Posted Speed Limit</i></b> | <b><i>Recommended Sight Distance</i></b> | <b><i>Minimum Sight Distance</i></b> |
|----------------------------------|--|--------------------------------------|
| <b><i>25 mph</i></b>             | <b><i>250 ft.</i></b>                    | <b><i>150 ft.</i></b>                |
| <b><i>30 mph</i></b>             | <b><i>300 ft.</i></b>                    | <b><i>200 ft.</i></b>                |
| <b><i>35 mph</i></b>             | <b><i>350 ft.</i></b>                    | <b><i>250 ft.</i></b>                |
| <b><i>40 mph</i></b>             | <b><i>400 ft.</i></b>                    | <b><i>325 ft.</i></b>                |
| <b><i>45 mph</i></b>             | <b><i>450 ft.</i></b>                    | <b><i>400 ft.</i></b>                |
| <b><i>50 mph</i></b>             | <b><i>500 ft.</i></b>                    | <b><i>475 ft.</i></b>                |

## **5.6 Intersection Improvements**

Reserved.

## **5.7 Parking Lot/Parking Space Design Standards**

1. Parking Space: The standard parking space is outlined in Section 300-513.B , City of Augusta Land Use Ordinance.
2. Aisles: Vehicular access shall be provided by one or more aisles, minimum widths of aisles are outlined in Section 300-513.B City of Augusta Land Use Ordinance.

## **5.8 Off Street Parking Construction Standards**

Where off-street parking for six (6) or more vehicles is required or provided, the following standards apply:

1. Driveways shall be designed in accordance with traffic standards for same. See Section 5.4 Technical Standards.
2. When surfacing permanent lots, there shall be a minimum twelve (12) inches of gravel base below the pavement. If heavy vehicles (GVW 23,000# or greater) are to use the parking lot after final construction, the depth of base is to be 18" or as determined by proper engineering analysis and subject to approval by the City Engineer. For all Parking Lots:
  - (a) All water shall be drained from the base material by ditching or underdrain.
  - (b) No grading or geometry that allows trapped water in the base will be permitted.
  - (c) In the case of slopes draining down to the parking lot, perimeter drains will be required.
3. A stormdrain system is required, such that storm water shall not cross any public sidewalk or street. The parking lot is to be graded so that there is no standing water. For all paved lots, the minimum pitch is  $\frac{1}{4}$ "/ft.
4. When parking lots abut the street, a continuous curb guard or wheel stop, at least six (6) inches in height and permanently anchored, shall be provided and maintained for a width of at least three (3) feet along that part of the lot line abutting the street. Alternatively, a continuous bumper guard of adequate strength at least twenty (20) inches in height, shall be provided and maintained,

so that bumpers of vehicles cannot project beyond its face towards the street or lot line involved.

## **5.9 Off-Street Loading Dimension Standards**

Each loading bay shall have minimum dimensions of fifty (50) feet by fourteen (14) feet and be located either within a building or outside and adjoining an opening in the building, except that in the case of hospitals, nursing homes and convalescent homes, the off-street loading area provided for ambulance and other emergency vehicles shall be exempt from the minimum dimension requirement but shall be of sufficient width and depth to permit safe and convenient access and egress from the loading area. Every part of such loading bay shall be located completely off the street. In any case where trucks, trailers, or other motor vehicles larger than the dimensions of the minimum loading bay habitually serve the building in question, additional space shall be provided so that each vehicle shall park or stand completely off the street.

# CHAPTER 6

## WATER QUALITY

### 6.1 Runoff & Erosion Control Standards

The Intent and Applicability statements for this chapter are found in the City of Augusta Land Use Ordinance, Section 300-514.B.

#### 6.1.1 Classifications

The following are general standards based on the type of drainage system in existence in the development area:

1. Urban Systems: Drainage facilities located within the urban compact, designated growth, and Riggs Brook Village District shall include an enclosed underground system capable of effectively removing storm water and groundwater from the street and adjacent areas. Discharge of drainage shall be into natural drainage courses or approved connection to an existing system capable of handling the increased flow. Applicants for development requiring storm drain system will be required to participate in the cost of extending the storm drain system to the site if such extension is possible.

Drainage systems conforming to the urban standards specified herein may be constructed in areas outside of those areas described above at the option of the Developer or if required by the City Engineer.

If conditions warrant and upon approval of the Storm Water Management Board, the Planning Board may allow a combination of rural and urban drainage standards or utilize rural standards entirely when it can be reasonably demonstrated that the absence of the urban drainage system will not adversely affect the surrounding environment, adjoining parcels, or public ways.

2. Rural Systems: Drainage facilities located outside the urban compact, designated growth, and Riggs Brook Village District and defined by these standards as rural may, if approved by the Storm Water Board, consist of a system of culverts and open drainage channels capable of effectively carrying storm waters into natural drainage courses and dewatering roadway subgrade.
3. Urban and/or Rural System: Drainage facilities located within areas defined by these standards as urban and/or rural shall comply with Sections 6.1.1

subsections 1 & 2 above, as appropriate.

4. Urban Combined Systems: Some areas of the City are served by a combined sewer and storm water system. Based on Federal regulations concerning combined sewer overflows and the Greater Augusta Utility District's Sewer Use Ordinance, new storm drainage is not permitted to connect into any sanitary sewer system. An exception to this rule is allowed under section 6.1.2.1.2.B. The following requirements shall apply to such areas:
  - (a) For residential properties not exceeding two (2) dwelling units, roof and pavement drainage may enter natural drainage, man-made drainage or storm water systems.
  - (b) Storm water run-off from multi-family (three (3) or more units), commercial, governmental, institutional and industrial property shall be piped into the storm water system where available. In areas beyond the current limits of the storm drainage system, the developer shall provide adequate drainage to the nearest natural water course or public storm drain system subject to the approval of the Storm Water Board.

## **6.1.2 Storm Water Runoff Standards**

### 6.1.2.1 General

Storm water run-off from Multi-family (three (3) or more units), commercial, governmental, institutional, and industrial developments shall meet the following:

1. Drainage System Plan required: See City of Augusta Land Use Ordinance.
2. A) Storm water management plans shall show means whereby the peak discharge for the developed site shall not exceed the peak discharge for the undeveloped site for the 2 and 25 year storms. Emergency spillways shall be provided for storms in excess of the 25 year storm.  
  
B) New storm drainage may be connected into combined systems if the stormwater is collected and controlled so that the post development rate of runoff is equal to or less than  $\frac{1}{2}$  the pre-development rate of runoff.
3. In the case of major subdivisions, street drainage shall be designed to detain storm water through a number of means with detention ponds as a last resort. Stormwater calculations for residential subdivisions (single and 2 family units) shall include roadway and individual lot runoff.

The following guidelines have been adopted by the Storm Water

Management Board:

- (a) Onsite detention may be required.
  - (b) Detention design for street drainage shall be controlled through one or more of the following methods: in-line or off-line-underground storage and hydrobrakes.
4. Pipe inlet and outlet invert elevations shall be shown on the profiles of the drainage plan. Catch basin inlet grate elevations shall also be shown on the plans.
  5. All drainage systems within the development shall be designed to meet the criteria of the performance standards for a 25 year storm based on rainfall data as available. Flows shall be computed by appropriate methods with design computations being submitted for review by the Storm Water Management Board. Warning: Other agencies may have different requirements.
  6. Upstream drainage shall be accommodated by an adequately sized drainage system through the proposed development for existing and future potential development in the upstream drainage area or areas tributary to the proposed development.
  7. Existing upstream and downstream drainage facilities shall be studied to determine the effect of the proposed development's drainage. The Developer shall demonstrate to the satisfaction of the Storm Water Management Board that the storm drainage from the proposed development will not, in any way, overload or damage existing storm drainage systems upstream or downstream from the proposed development.
  8. Where open ditches (other than streetside ditches), channels, streams, or natural drainage courses are used to collect, discharge, and/or transmit water through the development, an adequately sized, perpetual drainage easement shall be provided. Said easement shall be centered as closely as possible to the middle of the watercourse and shall be no less than 30 feet in width in order to allow adequate ingress and egress or maintenance equipment.
  9. Where a drainage easement is to contain an open ditch, channel, stream, or natural drainage course the following shall apply:
    - (a) The easement shall be cleared of all trees and brush and all stumps shall be removed to the extent necessary to allow adequate drainage and to provide vehicular access for maintenance where determined necessary by the Board.

(b) The channel shall be constructed according to a plan which will show the following:

- i. Location and boundaries of easement.
- ii. Contour lines depicting shape and slope of channel.
- iii. Typical cross sections of channel showing how the channel will be constructed to prevent erosion.

(c) Some of the easement information in section 6.1.2.1 subsection 9(b) above may be included on other plans in the development application.

10. Drainage easements shall be private and adequate care and maintenance of the easements shall be a provision of the deeds and covenants of the respective private properties on which the easements are located unless otherwise permitted by the Stormwater Board.

#### 6.1.2.2 Urban Drainage Systems

1. Underdrain shall be installed on both sides of curbed streets. Type "C" underdrain systems are allowed with appropriate design considerations, and approval of City Engineer. Type "B" underdrain systems may discharge into street catch basins. The City Engineer may approve the installation of underdrain on only the uphill side of the street on streets traversing a slope or on only one side of the street in relatively flat area if the Developer's engineer can demonstrate that the street area surface water infiltration will be quickly drained from the street aggregate base/subbase and that groundwater will not reach the street aggregate base/subbase once the development is fully developed.
2. The minimum pipe size for closed conduit systems shall be eight (8) inches in diameter and twelve (12) inches in diameter for open systems except for Type "B" underdrain pipe which shall be six (6) inches in diameter. Type "B" underdrain shall be dual wall corrugated polyethylene pipe with smooth interior bedded in crushed stone, and wrapped in geotextile fabric. (see underdrain detail figure 9, section 3.2.3)
3. The design of storm drains shall be on the basis of flowing full at a minimum velocity of two and one-half (2.5) feet-per-second.
4. Three hundred fifty (350) feet shall be considered as the maximum length for carrying open storm water in a street gutter to intake at a catch basin unless

otherwise approved by the Stormwater Board.

5. Catch basin inlet grate elevations shall be recessed two (2) inches below gutter line grades.
6. No water shall be permitted to drain across a street or an intersection.
7. Catch basins or manholes shall be placed at all vertical and horizontal changes in the alignment or pipe, and at all junctions. However, in no case shall catch basins or manholes be spaced at intervals exceeding three hundred fifty (350) feet, unless otherwise approved by the Greater Augusta Utility District.
8. A minimum of four (4) feet of cover is required over the tops of all storm drain pipe.
9. House foundation perimeter drains and roof drains with back flow check valves may be connected to the storm drainage system upon written approval by and under the supervision of the Greater Augusta Utility District.

#### 6.1.2.3 Rural Drainage Systems

1. Streetside ditches and outlet channels shall be of a configuration and size to carry the contributory storm water and subsurface flows from the streetway structure and streetside embankments. In all instances the inverts of the ditch shall be a minimum of six (6) inches below the subgrade of the streetway extended to the shoulder except as modified below:
  - (a) In areas of well drained native soils and approved by the City Engineer; or
  - (b) In areas where ditches are steep enough to prevent twenty-five (25) year storm water level from infiltrating the street aggregate base/subbase; or
  - (c) In areas where subsurface soils are of a nature requiring an underdrain system, subgrades may be constructed to direct subsurface water to the storm drain system.
2. Ditches shall drain in a positive manner.
3. Streetside ditches shall be at a minimum grade of 1.5% or the grade required to handle the design flow; whichever is greater unless otherwise approved by the City Engineer. Grades between the minimum stated and 0.5% will be allowed only if strict construction control is adhered to, and as approved by the City Engineer.

4. Ditch linings shall be provided to protect the side slopes and bottom from erosion and scour. Minimum channel linings for corresponding longitudinal slopes shall conform to the following table:

|             |  |
|-------------|--|
| 0.5% - 3.0% | <i>Loam and seed,</i>                                    |
| 3.0% - 6.0% | <i>Loam and seed, protected by erosion control mesh.</i> |
| 6.0% - 8.0% | <i>Sod placed over loam.</i>                             |
| Over 8.0%   | <i>Stone, masonry or bituminous concrete.</i>            |

5. Culverts

- (a) Cross Culverts: Culverts crossing under roads or streets shall be sized to pass a twenty (25) year frequency storm from the contributing drainage area with a maximum hydrostatic head of two (2) feet above the culvert inlet invert or three (3) inches below the outside edge of the shoulder, whichever is the greater elevation. Cross culverts shall be installed in accordance with figure 10, section 3.2.3
- (b) Driveway Culverts: Culverts shall be installed under any proposed or existing driveway that interrupts the natural or proposed longitudinal drainage along any street or road. Driveway culverts shall be of a size capable of passing a ten (10) year frequency storm from the contributing drainage area with a maximum hydrostatic head as specified in section 6.1.2.3 subsection 5(a) above. Driveway culverts shall be aluminized CMP, unless otherwise approved by the Director of Public Works, and have a minimum diameter of twelve (12) inches. The City Engineer shall make the final determination of the culvert size. Driveway culverts shall be installed on the grade of the streetside ditch line in accordance with figure 10, section 3.2.3.
- (c) The minimum cover over culverts in the roadway areas shall be twenty-four (24) inches. The minimum cover over driveway culverts shall be twelve (12) inches.
- (d) Streetside ditch lines shall be extended laterally and lowered to accommodate culverts with inlet and/or outlet inverts below normal grade of ditch line.

6.1.2.4 Drainage System Materials

The following material shall be utilized for drainage system construction and shall conform to City and Greater Augusta Utility District Specifications.

1. Reinforced Concrete Pipe: Concrete pipe shall be Class IV reinforced concrete pipe meeting ASTM Designation C-76.
2. PVC-SDR-35: All PVC pipe shall meet the requirements of SDR-35 of ASTM Specification D-3034 – 73.
3. Corrugated Metal pipe: Corrugated metal pipe and fittings shall be aluminized conforming to the requirements of MDOT specifications, Section 707 - Metallic Pipe. Pipe gage shall be as required to meet soil and traffic loads with a deflection of not more than five (5%).
4. Underdrain: Pipe for underdrain shall be meeting the requirements of AASHTO M252.
5. Manholes: Manholes shall be precast concrete sections conforming to ASTM C478.

Manhole steps shall be Polypropylene Plastic, M. A. Industries PS2-PF-SL or equal. The spacing between the steps shall be twelve (12) inches.

Manhole frame and cover shall be Etheridge No. E265S or equal. Covers shall be marked "DRAIN ".

Manholes shall have a minimum inside diameter of four (4) feet in the barrel section and two (2) feet in the cone or top slab ingress/egress opening.

Manhole inverts shall be constructed of hard brick meeting Federal Specifications SS-B-656 and shaped to the crown of the pipe.

All openings in the manhole for receiving pipe shall have a neoprene boot meeting ASTM C-443.

6. Catch Basins: Catch basins shall be precast concrete sections conforming to ASTM C478.

Cast Iron catch basin frames and grates shall be Lebaron Type F, Etheridge Type M or equal.

Catch Basins shall have a minimum two (2) foot sump for the retention of water borne solids.

Catch Basins shall have a minimum inside diameter of four (4) feet in the barrel section and two (2) feet in the cone or top slab ingress/egress opening.

All openings in the catch basin for receiving pipe shall have a neoprene boot meeting ASTM C-443.

#### 6.1.2.5 Drainage System Construction Standards

1. Drainage system construction shall conform to Greater Augusta Utility District Specifications and City Standards.
2. All trenching shall be accomplished in accordance with all appropriate State of Maine and Federal Safety Standards.
3. The maximum trench width at the pipe crown shall be the outside diameter of the pipe plus two (2) feet.
4. Pipe shall be bedded in three-quarter (3/4) inch screened stone with a minimum depth of six (6) inches below the pipe. The top of the stone shall be to the top of the pipe or above. A minimum of twelve (12) inches of cover sand shall be placed over the top of the pipe. When the excavated trench bottom is not sufficiently firm to properly support the pipe, the District Engineer may direct the Developer to excavate below grade to suitable foundation material and backfill with additional 3/4" screened stone.
5. All gravity pipe shall be laid with a laser beam unless other means are approved by the Greater Augusta Utility District.
6. All catch basins and manholes shall be founded below the frost line on a minimum depth of six (6) inches of three-quarter (3/4) inch screened stone compacted to a uniform density.
7. All drain outlets shall be terminated with riprap to prevent erosion. Facilities for energy dissipation shall be provided. Culvert pipe inlets shall be constructed so as to prevent or decrease damage to embankment and/or to improve the efficiency of the culvert. Inlet control devices shall be as approved by the Stormwater Board.
8. Type "B" underdrain (6 inch diameter; for intercepting groundwater) shall be installed in accordance with the underdrain detail figure 9, section 3.2.3.

### **6.1.3 Erosion and Sediment Control Plans**

#### 6.1.3.1 General

1. The City of Augusta Land Use Ordinance outlines the intent and applicability of these standards.

2. Performance Standard:

Erosion and sediments shall be controlled through appropriate management practices to prevent adverse downstream water quality impacts. Hydraulic calculation techniques and design standards for facilities to achieve this performance standard shall be of accepted methods and subject to approval of the Storm Water Management Board.

3. Natural and man-made drainage ways and drainage outlets shall be protected from erosion from water flowing through them. Drainageways shall be designed and constructed in order to carry water from a twenty-five (25) year storm or greater, and shall be stabilized with vegetation or lined with riprap.
4. Erosion and sedimentation control measures shall apply to all aspects of the proposed project involving land disturbance, and shall be in operation during all stages of the activity. The amount of exposed soil at every phase of construction shall be minimized to reduce the potential for erosion.
5. The Developer shall maintain all components of the erosion and sediment control and storm water management system unless the system is formally accepted by the City, or Greater Augusta Utility District, or is placed under the jurisdiction of a legally created property owners' association whose charter and powers require maintenance of the system, including adequate financing to carry out this responsibility.
6. Stabilization timelines:
  - (a) In general, all activities regulated by these standards shall be conducted after March 1 and before October 30 unless accomplished in conjunction with approved construction.
  - (b) Disturbed soil shall be stabilized within one week from the time it was last actively worked using temporary or permanent measures such as placement of riprap, sod, mulch or erosion control blankets, or other comparable measures.
  - (c) In all cases within the shoreland zones, permanent stabilization shall occur within nine (9) months of the initial date of exposure.

- (d) Fill sites shall be graded and seeded within thirty (30) calendar days of their closure or by October 31 (whichever date occurs first). Fill sites may remain open after October 31st only by written permission of the Code Enforcement Officer.
- (e) Permanent revegetation of all disturbed areas, using native plant material wherever possible, shall
  - i. Occur within 30 days from the time the areas were last actively worked,
  - ii. For spring and summer activities, by October 31
  - iii. Or for fall and winter activities, by June 15, except where precluded
  - iv. By the type of disturbance (e.g., riprap, road surfaces, etc.). The vegetative cover shall be maintained.
- 7. In order to create the least potential for erosion, development shall be designed to fit with the topography and soils of the site. Areas of steep slopes where high cuts and fill may be required shall be avoided wherever possible, and natural contours shall be followed as closely as possible.
- 8. If mulch is likely to be moved because of steep slopes or wind exposure, it shall be anchored with netting, peg and twine, or other suitable method and shall be maintained until a catch of vegetation is established over the entire disturbed area.
- 9. In addition to placement of riprap, sod, erosion control blankets or mulch, additional steps shall be taken where necessary, in order to prevent sedimentation of the water. Evidence of sedimentation includes visible gully erosion, discoloration of water by suspended particles and slumping of banks. Silt fences, staked hay bales and other sedimentation control measures, where planned for, shall be in place prior to commencement of work, but shall also be installed whenever necessary due to sedimentation.
- 10. Mulch or other temporary erosion control measures shall be maintained until the site is permanently stabilized with vegetation or other permanent control measures.
- 11. Where mulch is used, it shall be applied at a rate of at least one (1) bale per five hundred (500) square feet and shall be maintained until a catch of vegetation is established.
- 12. Any and all excavated material shall be removed to approved location(s). The City shall provide a list of approved sites within the City limits.

#### 6.1.4 Checklist of Required Submissions

##### 1. Map Submissions:

- (a) Location map with boundaries of development clearly marked.
- (b) USGS Topographic map or larger scale map when available or if necessary for clarification with boundaries of site clearly marked and drainage areas used for storm water management calculations noted:  
Pre-development drainage areas noted.  
Post-development drainage areas noted.
- (c) Topographic map(s) specifically for project with:  
Pre-development contours noted.  
Post-development contours noted.  
Limits of clearing and grading noted.  
Location of storm water control structures.  
Location of sediment and erosion control practices.  
Pre-development drainage patterns noted.  
Post-development drainage patterns noted.  
Flow lengths used in time-of-concentration calculations noted.
- (d) SCS medium intensity soils map with boundaries of development clearly marked and drainage areas used for storm water management calculations noted.
- (e) High Intensity Soil Survey for the development site.

##### 2. Narrative Submissions:

- (a) Description of the development:  
Describe nature of development  
Describe present and post-development land use cover.  
Describe which areas will be disturbed by construction.  
Describe adjacent areas, which will be disturbed by construction.  
Describe areas on-site especially vulnerable to erosion.  
Describe soils found on-site.
- (b) Description of storm water handling:  
Summary and analysis of existing storm water movement.  
Analysis of post-development storm water movement.  
Methods being proposed to control storm water.  
Note method of calculation.

- (c) Description of erosion and sedimentation control:  
NOTE: List and describe the practices and structures to be used.  
Indicate how accelerated erosion will be minimized.  
Indicate how sedimentation will be minimized.
- (d) Schedule of construction (including schedule of installation/implementation of temporary and permanent sediment and erosion control structures and management practices).
- (e) Description of inspection and maintenance for sediment and erosion control measures.

3. Design Drawings and Calculations:

- (a) Detail drawings of any structural practices used that are not referenced.
- (b) Calculations for storm water management practices.  
Worksheets (show assumptions used).  
Detention basins.  
Culverts.  
Ditches and waterways.  
other:
- (c) Calculations for sediment and erosion control practices.  
worksheets  
Sediment basins.  
Diversions.  
Ditches and waterways.  
Other

**6.1.5 Resource Publications, current revisions, for Preparing Erosion and Sediment Control Plans**

1. The Maine Erosion and Sediment Control Handbook for Construction, prepared by the Maine Department of Environmental Protection.
2. Storm Water Management Manual, prepared by the Greater Portland Council of Governments.
3. Technical Release 55 "Urban Hydrology for Small Watersheds " R-55), June 1986 (Available from National Technical Information Service (NTIS), U.S. Dept. of Commerce, Springfield, VA 22161, (703) 487-4650) (TR 20 may also be used)

4. Other publications may be used subject to approval of the Storm Water Management Board.

#### **6.1.6 General Criteria for Sediment and Erosion Control Plans**

1. All denuded areas shall be stabilized.
2. All soil stockpiles shall be stabilized.
3. Permanent vegetation shall be established.
4. Adjacent properties shall be protected from sediment from the development.
5. Adjacent properties shall not be subjected to erosion due to increased runoff water from the development.
6. Cut and fill slopes shall be constructed and stabilized in a way to reduce erosion.
7. On-site waterways and outlets shall be stabilized.
8. Storm sewer inlets shall be protected from sediment.
9. If working in or crossing live streams, they shall be protected during construction.
10. Construction access routes shall be stabilized to include dust control.
11. Temporary sediment and erosion control structures shall be removed when the development is finished.
12. Maintenance of storm water, sediment, and erosion control structures shall be addressed adequately.

#### **6.1.7 Appurtenances**

1. Riprap: MDOT specifications, Section 610 - Stone Fill, Riprap, Stone Blanket and Stone Ditch Protection, shall be applicable to this subject.
2. Erosion Control Blankets: MDOT specifications, Section 613 - Erosion Control Blankets, shall be applicable to this subject.

3. Sodding: MDOT specifications, Section 616 - Sodding, shall be applicable to this subject.
4. Loam: MDOT specifications, Section 615 - Loam, shall be applicable to this subject. All esplanade, circular turnaround islands, ditch slopes, and other planting strip areas at sides of streets shall receive at least 4 inches of loam.
5. Seeding: MDOT specifications, Section 618 - Seeding, shall be applicable to this subject. Seeding, Method Number 1 (Park Mixture) shall be used on areas specified above under Loam.
6. Mulch: MDOT specifications, Section 619 - Mulch, shall be applicable to this subject.
7. Geotextiles: MDOT specifications, Section 620 - Geotextiles, shall be applicable to this subject.
8. Landscaping: MDOT specifications, Section 621 - Landscaping and Section 622 - Transplanting Shrubs, Hedges and Trees, shall be applicable to this subject.
9. Dust Control: MDOT specifications, Section 637 - Dust Control, shall be applicable to this subject. Dust control shall be provided for all areas as necessary to prevent the visible emissions of dust in the air.

# **CHAPTER 7**

## **PUBLIC SAFETY STANDARDS**

### **7.1 Scope**

Each site plan review and subdivision will be reviewed by the Fire Department in an effort to provide a reasonable degree of safety for the occupants and their properties of the proposed developments. The following are established as minimum requirements and may necessitate additional considerations to offset unusual circumstances.

### **7.2 Plans**

In addition to the information required by Section 300-601.D. of the City of Augusta Land Use Ordinance, the Fire Department requires that plans submitted for review and approvals shall include the following information:

1. Existing and proposed hydrants or alternate fire protection water supply.
2. All streets, cul-de-sacs, hammerheads and emergency access routes.
3. Any geographical or structural barriers to the site or to proposed structures.
4. Building construction type.
5. Building occupancy.
6. Any special usage or materials storage that might present a significant fire protection problem.

### **7.3 Hydrants**

All structures constructed within the hydrant district of the City shall have hydrants located within the distance specified by the Fire Chief or his designee. All hydrants, public and private, shall comply with the standards of the City and the Greater Augusta Utility District and shall be properly maintained.

In the absence of fire hydrants, consideration shall be given to an alternate method of providing adequate fire protection.

## 7.4 Standards

### 7.4.1 Access Requirements

1. Access to subdivisions shall comply with the following:

|                         |  |
|-------------------------|--|
| <b>1-34 units</b>       | <b><i>A single access road</i></b>   |
| <b>35-68 units</b>      | <b><i>two (2) access roads or single access road and an emergency access lane.</i></b> |
| <b>68 or more units</b> | <b><i>two (2) access roads.</i></b>  |

2. Where residential units are provided with an approved sprinkler system (designed in accordance with NFPA standards and approved by the Bureau) the following minimum access standards may be substituted:

|                          |   |
|--------------------------|---|
| <b>1-68 units</b>        | <b><i>One (1) access road</i></b>                               |
| <b>68-100 units</b>      | <b><i>One (1) access road and an emergency access lane.</i></b> |
| <b>100 or more units</b> | <b><i>a minimum of two (2) access roads.</i></b>                |

3. Building "setbacks " shall allow for access by emergency vehicles and their related functions, and shall be evaluated on the following merits:

- (a) Construction type.
- (b) Building occupancy.
- (c) Building height.
- (d) Impediments to the actual structures.
- (e) Safety features/systems provided.

4. No turning radius (inside) shall be less than twenty-five (25) feet.
5. Emergency access lanes shall be a minimum of sixteen (16) feet wide and be of such design and so maintained as to support the weight of emergency vehicles during all weather conditions.
6. The blockading of any emergency lane shall be done by gates which are locked by chain and padlock. Emergency lanes shall be maintained and accessible for use at all times.

End document