



# **DEVELOPMENT STANDARDS**

**1985**

## DEVELOPMENT STANDARDS

### INDEX

DIVISION 1000.....	ROADWAYS
DIVISION 2000.....	SANITARY SEWERS
DIVISION 3000.....	STORM DRAIN
DIVISION 4000.....	WATER
DIVISION 5000.....	UTILITIES
DIVISION 6000.....	RESERVED
DIVISION 7000.....	PERMITS

**DIVISION 1000**

**ROADWAYS**

## DIVISION 1000

### ROADWAYS

#### SECTION 1001 GENERAL

##### 1001.1 References

- (a) City of Palmer 1984 Traffic Study
- (b) Matanuska-Susitna Borough Title 16
- (c) City of Palmer Municipal Code

##### 1001.2 Development Requirements

The Developer shall provide roads, curb and gutter, sidewalks, drainage, etc. as provided herein and in accordance with the Palmer Municipal Code.

#### SECTION 1002 STREET DESIGNATIONS

##### 1002.1 City of Palmer Traffic Study, 1984

Streets shall be classified according to STREET DESIGNATIONS as provided in the City of Palmer 1984 Traffic Study. Existing streets are designated in the Traffic Study and future street designations in new subdivisions shall be determined by the City of Palmer prior to subdivision approval.

##### 1002.2 Street Designation

The City of Palmer designates streets as follows:

- I. Major Arterial. These are high-volume, high speed routes. Access shall be limited to a minimum number of streets or frontage road intersections. Sufficient right-of-way shall exist for future expansion to four lanes.

- II. Arterial. These are urban streets which carry traffic through the City at design speeds of thirty miles per hour. Access shall be limited to street intersections. A sidewalk and bikepath shall be included in the design. Streets shall be wide enough to accomodate four traffic lanes.
- III. Collector. Collector streets are medium-volume routes which convey traffic from residential areas to arterial streets, between arterials, or from arterials to commercial areas. Access should be discouraged or even prohibited. A sidewalk and bikepath shall be included in the design. Expansion to four lanes shall be accomodated within the existing right-of-way if future conditions require it.
- IV. Commercial. Commercial streets provide access to retail establishments and off-street parking lots. Parallel parking lanes shall be provided which, if necessary, will be used as turning lanes at intersections.
- V. Residential. These streets consist of two traffic lanes flanked by a rolled, or mountable, curb section with no on-street parking. They do not include sidewalks. Access is uncontrolled and is gained over the curb.
- VI. Unimproved and Partially Improved. These consist of existing right-of-way where no streets currently exist or partially improved gravel or dirt, surface treatment roads with or without ditches exist.

**SECTION 1003 STREET IMPROVEMENTS**

1003.1 Major Arterial

This street designation shall have a design speed of forty miles per hour, shall have two twelve foot paved driving lanes with four foot paved shoulders (32 foot total pavement width). The design shall provide for super elevations, curve widening, adequate site distance, guard rails, traffic control, etc.

1003.2 Arterial

This street designation shall have a design speed of thirty miles per hour. The arterial street shall provide two twelve foot driving lanes, two ten foot parking lanes, sidewalk, bike

trail, and curb and gutter. Traffic control shall be provided at intersections with major arterials and with other arterials. All other streets intersecting the arterial shall have stop signs.

### 1003.3 Collector

This street designation shall have a design speed of thirty miles per hour. The collector shall have two sixteen foot driving lanes, curb and gutter, sidewalk, and biketrail. The collector shall have traffic control at intersections with arterial streets. All other streets shall be controlled at the collector intersection. Access should be limited to street intersections.

### 1003.4 Commercial

This street designation shall have a design speed of twenty-five miles per hour. The commercial street shall have two twelve foot driving lanes, two eight foot parking lanes, curb and gutter and sidewalk. The commercial street shall have traffic control at all intersections other than residential, residential streets shall be controlled at these intersections. Access to private property shall consist of no more than one twenty-four foot driveway for commercial and twenty foot driveway for residential per seventy-five feet of frontage. No driveways shall be located nearer than thirty feet to an intersection. All driveways shall be approved by the City of Palmer as provided in Division 7000 PERMITS.

### 1003.5 Residential

This street designation shall have a design speed of twenty miles per hour. The residential street shall consist of two twelve foot driving lanes with curb and gutter. No on-street parking shall be provided. No sidewalk is required. Residential streets shall have traffic control at all intersections.

### 1003.6 Unimproved

No partially or unimproved roads shall be allowed in the City of Palmer for new subdivisions. Existing unimproved or partially improved streets in the City of Palmer shall be upgraded in the future through the establishment of Road Improvement Districts as provided by the City of Palmer.

## **SECTION 1004 Miscellaneous Street Requirements**

### **1004.1 Lighting**

All streets shall be illuminated as provided in Section 1005.

### **1004.2 Traffic Markings**

All streets shall receive traffic markings for centerline, lanes, parking and cross walks.

### **1004.3 Sidewalks**

All sidewalks shall be provided with handicap access at all intersections, alleys, curb cuts or any other breaks. All streets with sidewalks shall have Type I Barrier Style Curbs. No sidewalks shall be allowed with rolled curb.

### **1004.4 Surfacing Requirements**

All streets shall be paved with a minimum thickness of two inches of asphalt pavement. All leveling coarse shall have a minimum thickness of four inches. Sub-base (gravel) material shall be a minimum of 3.0 thick.

### **1004.5 Cul-du-Sacs**

All cul-du-sacs shall have a minimum diameter of eighty-five feet of pavement (front of curb to front of curb).

### **1004.6 Intersection Drainage**

All intersections shall have positive drainage. No valley gutters shall be installed.

### **1004.7 Traffic Control**

All streets shall be provided with traffic control as specified in Section 1003 and shall be properly signed.

### **1004.8 On Street Parking**

On designated streets provided with on street parking, no parking shall be allowed within twenty feet of any cross walks, intersections or alleys. No parking shall be allowed within twenty feet of a fire hydrant.

#### 1004.9 Signing

All streets shall have "No Parking" areas signed, and all street intersections shall have "street name" signs. All crosswalks located where no stop signs exist shall have "cross walk" signs.

#### 1004.10 Traffic Markings.

All traffic markings shall be four (4") inches solid stripes with yellow for centerline and white lines outlining parking stalls.

### **SECTION 1005 ILLUMINATION**

#### 1005.1 General

All streets shall be provided with illumination.

#### 1005.2 Height

Luminaires shall have a nominal height of thirty (30) feet above the roadway for residential streets and forty (40') feet in commercial areas.

#### 1005.3 Wind Load

Luminaires shall have a wind load certification for 100 mph sustained and 120 mph gusts.

#### 1005.4 Spacing

Luminaires shall be spaced a maximum distance of 300 feet.

#### 1005.5 Lamps

The lamp shall be a 250 watt, 240/480 volt, high pressure sodium lamp with clear finish and mogul base.

#### 1005.6 Suppliers

The luminaires shall be manufactured by a regular supplier of luminaires. Acceptable suppliers are General Electric, McGraw Edison, and Sylvania.

#### 1005.7 Distribution

Luminaires shall be capable of producing IES Type III medium semi-cut-off distribution.



## SECTION 1006 PERMITS

### 1006.1 Plan Review

Prior to any construction, the City of Palmer shall have revised and approved construction plans.

### 1006.2 Permits

Prior to any construction, the Contractor shall have obtained, from the City of Palmer, any right-of-way, road closure, underground utility, and driveway permits required. The permit application forms are as provided in Division 7000.

**DIVISION 2000**  
**SANITARY SEWERS**

**DIVISION 2000**  
**SANITARY SEWERS**

**SECTION 2001 GENERAL**

2001.1 References:

1. 18 AAC 72 WASTEWATER DISPOSAL REGULATIONS
2. Recommended Standards for Sewage Works, Great Lakes Upper Mississippi River Board of State Sanitary Engineers
3. Palmer Municipal Code

2001.2 State of Alaska

All sanitary sewer system designs shall be in compliance with all State and Federal laws, and shall have been reviewed and approved for construction by the State of Alaska Department of Environmental Conservation.

- 2001.3 All sewage discharge, collection and treatment shall be in compliance with the Palmer Municipal Code, Title 13 Public Utilities.

**SECTION 2002 MATERIALS**

2002.1 Pipe

- A) Only Ductile Iron Pipe, Class 50 for gravity sewers and Class 52 for pressure sewers shall be allowed.

- B) Minimum Size

No gravity sewer conveying raw sewage shall be less than eight inches in diameter.

- C) Depth

In general, sewers should be placed eight (8') feet deep to receive sewage from basements and to prevent freezing. Insulation shall be provided for sewers that cannot be placed at a depth of eight feet. This insulation shall be of sufficient thickness and appropriately placed so as to give the same insulation as the recommended soil cover.

D) Slope

- i) All sewers shall be designed and constructed to give mean velocities, when flowing full, of not less than two feet per second, based on Kutter's formula using an "n" value of 0.013. The following are the minimum slopes which should be provided; however, slopes greater than these are desirable:

<u>Sewer Size</u>	<u>Minimum Slope in Feet Per 100 feet (m/100 m)</u>
8 inch	0.40
10 inch	0.28
12 inch	0.22
14 inch	0.17
15 inch	0.15
16 inch	0.14
18 inch	0.12
21 inch	0.10
24 inch	0.08
27 inch	0.067
30 inch	0.058
36 inch	0.046

- ii) Slopes slightly less than those required for the 2.0 feet per second velocity, when flowing full, may be permitted. Such decreased slopes will only be considered where the depth of flow will be 0.3 of the diameter or greater for design average flow. Whenever such decreased slopes are selected, the design engineer must furnish a report with his computations of the anticipated flow velocities of average and daily or weekly peak flow rates. The pipe diameter and slope shall be selected to obtain the greatest practical velocities to minimize settling problems. The operating authority of the sewer system will give written assurance to the appropriate reviewing agency that any additional sewer maintenance required by reduced slopes will be provided.
- iii) Sewers shall be laid with uniform slope between manholes.
- iiii) Sewers on twenty percent slopes or greater shall be anchored securely with concrete anchors or equal, spaced as follows:

1. Not over thirty-six feet center to center on grades twenty percent and up to thirty-five percent;
2. Not over twenty-four feet center to center on grades thirty-five percent and up to fifty percent;
3. Not over sixteen feet center to center on grades fifty percent and over.

e. Alignment

All sanitary sewers shall be laid with straight alignment between manholes, unless otherwise approved by the City of Palmer.

f. Changes in Pipe Size

All changes in pipe sizes shall occur at manholes. When a smaller sewer joins a large one in a manhole, the invert of the larger sewer should be lowered sufficiently to maintain the same energy gradient. An approximate method for securing these results is to place the 0.8 depth point of both sewers at the same elevation.

Sewer extensions should be designed for projected flows even when the diameter of the receiving sewer is less than the diameter of the proposed extension. The appropriate reviewing agency may require a schedule for future downstream sewer relief.

## 2002.2 Manholes

A. Location

Manholes shall be installed at the end of each line; at all changes in grade, size or alignment; at all intersections; and at distances not greater than four-hundred feet for sewers twenty-one inches or less, and five-hundred feet for twenty-four inch or larger. Greater spacing for larger sewers shall have prior approval from the City of Palmer.

B. Cleanouts

Cleanouts may be used only for special conditions and shall not be substituted for manholes nor installed at the end of laterals greater than one-hundred-fifty feet in length. The use of cleanouts shall be approved by the City of Palmer.

C. Drop Type

A drop pipe should be provided for a sewer entering a manhole at an elevation of twenty-four inches or more above the manhole invert. Where the difference in elevation between the incoming sewer and the manhole invert is less than twenty-four inches, the invert should be filleted to prevent solids deposition.

D. Diameter

The minimum diameter of manholes shall be forty-eight inches; larger diameters are preferable for larger diameter sewers. A minimum access diameter of twenty-two inches shall be provided.

2002.3 Service Connection

A. Location

Each lot shall have one service connection. If more than one building is present on a single lot, specific permission must be obtained from the City of Palmer to have more than one service connection per lot.

B. No service connections shall be allowed to enter at a manhole.

C. The minimum size of a service connection shall be four inches.

D. In the case of vacant lots, service connections shall be sized to accomodate the maximum size structure that could be constructed for the zoning of the lot.

**SECTION 2003 PERMITS**

2003.1 The applicable permits, as provided in Division 7000 shall be obtained prior to construction.

#### 2003.2 Underground Utility Permit

No underground utility permit shall be issued until the Department of Environmental Conservation has issued a Letter of Approval.

#### 2003.3 Sanitary Service Connection

No sanitary service connection permit shall be issued until the appropriate sewer main has been tested and approved for service connections.

#### 2003.4 No live sewage shall enter any sewer main or service connection until the Department of Environmental Conservation has issued a Certificate to Operate, unless otherwise approved by the said Department in writing and by the City of Palmer.

Additionally, the sewage line shall have received final acceptance from the City of Palmer.

### SECTION 2004 OVERSIZING SYSTEM

#### 2004.1 General

The City of Palmer may choose to increase the size of the system which would be required to service the development. Any such increases shall be solely at the option of the City of Palmer.

#### 2004.2 Basis of Payment

The City of Palmer will reimburse the Developer only for the difference in material costs between the necessary size and the "oversize".

The Developer shall submit itemized invoices for materials for both the necessary size and the over size. The City of Palmer will reimburse the difference.

No reimbursement shall be made without invoices.

No reimbursement shall be made for any other costs that may be incurred other than material costs of oversizing.

**DIVISION 3000**

**STORM DRAIN**



**DIVISION 3000  
STORM DRAIN**

**SECTION 3001 GENERAL**

All subdivisions within the City of Palmer shall provide a Storm Drainage System in accordance with Titles 12 and 13 of the Palmer Municipal Code.

**SECTION 3002 PIPE**

3002.1 Size

Minimum size shall be eighteen inch and twelve inch leads to catch basins.

3002.2 Depth

The depth of the storm drain pipe shall be adequate to maintain structural integrity in regards to earth pressures and roadway loadings and shall be adequately separated from any water or sanitary sewers to prevent freezing. The storm drain shall be placed at an approximate depth of five feet.

3002.3 Slope

The slope of the storm drain shall be adequate to prevent sedimentation and shall not be so great as to cause scouring.

3002.4 Alignment

Storm drains shall be laid in a straight alignment between manholes unless otherwise approved by the City of Palmer

3002.5 Changes in Pipe Size

All changes in pipe size shall occur at manholes.

**SECTION 3003 MANHOLES**

3003.1 Location

Manholes shall be located at all piping intersections and shall be located at a maximum spacing of four-hundred linear feet unless otherwise approved.

### 3003.2 Diameter

Manholes shall have a minimum of forty-eight inch diameter and shall have a minimum access diameter of twenty-two inches.

### 3003.3 Catch

All manholes shall be provided with a minimum catch of eight inches.

## SECTION 3004 CATCH BASINS

### 3004.1 Location

Catch Bains shall be provided at all low points and be spaced per four-hundred linear foot of surface drainage along gutter lines (maximum).

All intersections shall be provided with positive drainage. No valley gutter shall be allowed.

## SECTION 3005 PERMITS

All City of Palmer permits necessary shall have been aquired from the City of Palmer prior to construction. Permit applications are as provided in Division 7000.

The Developer shall make himself aware of any and all locate State or Federal laws regarding drainage and shall be in compliance with them. It shall be the Developer's responsibility to obtain any and all discharge, wetlands, etc. permits that may be requiried by these governmental bodies.

The use of drywells shall require specific written permission by the City of Palmer.

## SECTION 3006 OVERSIZING OF SYSTEM

### 3006.1 General

The City of Palmer may choose to increase the size of the system which would be required to service the development. Any such increases shall be soley at the option of the City of Palmer.

### 3006.2 Basis of Payment

The City of Palmer will reimburse the Developer only for the difference in material costs between the necessary size and the "oversize".

The Developer shall submit itemized invoices for materials for both the necessary size and the over size. The City of Palmer will reimburse the difference.

No reimbursement shall be made without invoices.

No reimbursement shall be made for any other costs that may be incurred other than material costs of oversizing.

**DIVISION 4000**

**WATER**

**DIVISION 4000  
WATER**

**SECTION 401 GENERAL**

4001.1 References

- A. Palmer Municipal Code Titles 12 and 13
- B. 18 AAC 80
- C. Recommended Standards for Water Works Great Lakes Upper Mississippi River Board of State Sanitary Engineers.
- D. American Water Works Association Standards.
- E. Insurance Service Office.

4001.2 Water Requirements

All subdivisions within the City of Palmer shall be provided with a water system in accordance with the Palmer Municipal Code Titles 12 and 13. Designs are subject to approval by the City of Palmer.

No construction of a water system shall be allowed until a Certificate to Construct has been issued by the Department of Environmental Conservation.

**SECTION 4002 WATERMAINS**

4002.1 Minimum Size

No water main shall be smaller than six inch.

4002.2 Materials

All water mains shall be constructed of at least Class 52 Ductile Iron Pipe.

4002.3 Depth

All water mains shall have a cover of a minimum of ten feet.

4002.4 Location

All water mains shall have a location as shown in Division 6000 Standard Details. Minimum separation from sanitary sewers shall be ten feet.

## **SECTION 4003 VALVES**

### **4003.1 Location**

All water mains shall have valves placed a maximum distance of eight-hundred linear feet apart. Additionally, valves shall be placed at all pipe intersections or branches so that individual waterlines may be isolated.

## **SECTION 4004 FIRE HYDRANTS**

### **4004.1 Type**

Fire Hydrants shall be single pumper, or if required by the Palmer Fire Department, double pumper Mueller Centurian. Hydrant types shall be approved by the Palmer Fire Chief.

### **4004.2 Location**

Fire hydrants shall be located with a four-hundred feet maximum separation.

## **SECTION 4005 SERVICE CONNECTIONS**

### **4005.1 Size**

The minimum allowable size shall be 3/4" inch. All service lines to vacant lots shall be sized to accomodate the largest structure that could be constructed for the zoning of that lot.

## **SECTION 4006 FIRE LANES**

### **4006.1 Requirements**

Fire lines shall be installed as required by the City of Palmer Building Department and Fire Department.

### **4006.2 Size**

Fire lines shall have a minimum size of six inches.

### 4006.3 Fire Flows

Required fire flows shall be determined by using:

Guide For Determination of Required Fire Flow  
Insurance Service Office  
160 Water Street  
New York, NY 10038

## SECTION 4007 PERMITS

Prior to construction, plans shall have been reviewed and approved by the City of Palmer and all necessary permits shall have been obtained. Permit applications are as provided in Division 7000.

The Developer shall have obtained a Certificate to Construct from the Department of Environmental Conservation prior to construction.

## SECTION 4008 OVERSIZING OF SYSTEM

### 4008.1 General

The City of Palmer may choose to increase the size of the system which would be required to service the development. Any such increases shall be solely at the option of the City of Palmer.

### 4008.2 Basis of Payment

The City of Palmer will reimburse the Developer only for the difference in material costs between the necessary size and the "oversize".

The Developer shall submit itemized invoices for materials for both the necessary size and the over size. The City of Palmer will reimburse the difference.

No reimbursement shall be made without invoices.

No reimbursement shall be made for any other costs that may be incurred other than material costs of oversizing.

**DIVISION 5000**

**UTILITIES**



**DIVISION 5000  
UTILITIES**

**SECTION 5001 GENERAL**

Utilities shall be provided in accordance with Palmer Municipal Code, Titles 12 and 13.

**SECTION 5002 ELECTRICAL**

5002.1 Location

All electrical shall be located as shown in the Standard Details, Division 6000.

5002.2 All electrical work shall be coordinated through Matanuska Electric Association and shall receive design and location approval from the City of Palmer prior to issuance of permits.

**SECTION 5003 TELECOMMUNICATIONS**

5003.1 Location

All telecommunications shall be located as shown in Division 6000 Standard Details.

5003.2 All telecommunication work shall be coordinated through Matanuska Telephone Association and shall have design and location approval from the City of Palmer prior to issuance of permits.

**SECTION 5004 NATURAL GAS**

5004.1 Location

All natural gas shall be located as shown in Division 6000 Standard Details.

5004.2 All natural gas work shall be coordinated through Enstar and shall have design and location approval from the City of Palmer.

## **SECTION 5005 MISCELLANEOUS**

5005.1 All utility construction shall be documented and as-built drawings certified to be true and correct, showing both vertical and horizontal locations shall be submitted to the City of Palmer.

5005.2 All utility construction shall be in compliance with Part I Standard Construction Specifications.

5005.3 All utilities, including services shall be under ground.

## **SECTION 5006 PERMITS**

Prior to any construction or installation of utilities, appropriate permits shall have been issued by the City of Palmer.

**DIVISION 6000**

**RESERVED**



**DIVISION 7000**

**PERMITS**