



VILLAGE OF ACME  
GENERAL DESIGN STANDARDS  
AND CONSTRUCTION SPECIFICATION  
2024

Approved by Council Motion # 109-2024.

## STANDARDS AND REQUIREMENTS

The Developer and/or Contractor shall be governed by the latest versions of the following standards:

- City of Calgary's Design Guidelines for Subdivision Servicing, Standard Specifications: Sewer Construction, Standard Specifications: Waterworks Construction, Standard Specifications: Roads Construction, Development Guidelines and Standard Specifications: Landscape Construction and the Stormwater Management and Design Manual.
- Alberta Environment & Parks Standards and Guidelines for Municipal Waterworks, Wastewater and Storm Drainage Systems

Copies of these standards can be accessed from the City of Calgary website.

Exceptions to the City of Calgary Specifications are outlined within this document and the following special clauses shall have precedence.

### 1. GENERAL

- 1.1 Recommendations made in the latest version of the Village of Acme Infrastructure Master Plan shall be followed. The Infrastructure Master Plan is available on the Village of Acme (Village) website <https://acme.ca/info-forms/master-infrastructure-plan/>. Other guiding statutory and technical documents such as the Municipal Development Plan (MOP), intermunicipal Development Plan (IDP), Land Use Bylaw, ASP and TIA are also available on the Village website <https://acme.ca/info-forms/development/>.
- 1.2 Good engineering practices should be adhered to at all times. The Village reserves the right to ask for higher alternative standards or approve exceptions where necessary.
- 1.3 The Developer shall notify the Village of award of construction contracts for the various municipal improvements and shall state the name of the Contractor, address, phone number and contact. The Developer shall ensure that the Contractor(s) are properly bonded for the performance of the work and that the Contractor carries Liability, Course of Construction and Equipment Insurance as required by the Village and names the Village and the Village Engineers as insured parties. Written permission to commence work must first be obtained from the Village by submitting the form found in Appendix C- Construction Commencement Notification.

### 2. SPECIAL CONSIDERATIONS

- 2.1 Sanitary Sewer
  - 2.1.1 Gravity sewer mains shall be polyvinyl chloride (PVC) or concrete and shall meet CSA designations. For pressure pipes - the use of continuous pipe is preferred.
  - 2.1.2 Alberta Environment and Parks - Wastewater Systems Standards for Performance and Design shall apply to minimum pipe grades but also ensuring that the average flow will achieve a minimum velocity of 0.60m/s for self-cleansing while the velocity at peak flow shall not exceed 3.0 m/s to minimize turbulence and erosion. Sanitary sewers shall be designed so that the sewer is flowing at no more than 80% of the depth when conveying the peak design flow. The minimum slope for 200mm sewer mains on dead end sections shall be 0.80% and for all other segments, the minimum slope shall be 0.60%.
  - 2.1.3 Separation of water and sewer lines shall conform to Alberta Environment and

Parks - Standards for Municipal Waterworks, Wastewater and Storm Drainage Systems.

2.1.4 Design flows and peaking factors for new developments are as follows:

- a. Residential developments = 220 Liters/capita/day
- b. Industrial/Institutional/Commercial = 6.4m<sup>3</sup>/ha/day
- c. Residential Peaking Factor shall utilize the Harmon's Equation:  
 $PF = 1 + 14/(4+P^{1/2})$  where P is the contributing population in thousands.  
PF should have a minimum value of 2.50 and a maximum of 4.0.
- d. Industrial/Institutional/Commercial Peaking Factor shall follow the Alberta Environment and Parks - Wastewater System Standards:  
 $PF = 6.659(OAvGY)^{-0.168}$ . where OAvG is the average flow rate in L/s and a maximum PF of 5.
- e. Infiltration and Inflow rates shall be 0.28 L/s/ha of development.

2.1.5 Manhole covers shall not have the name of any other municipality and must label "Sanitary Sewer" in the cover.

2.1.6 Connection of foundation weeping tile and sump pumps to the sanitary sewers is not permitted.

## 2.2 Storm Sewer

2.2.1 Sewer mains shall be polyvinyl chloride (PVC) or concrete meeting CSA designations or concrete meeting A.S.T.M. designations.

2.2.2 Alberta Environment and Parks - Stormwater Management Guidelines shall apply to minimum pipe grades.

2.2.3 Separation of water and sewer lines shall conform to Alberta Environment and Parks - Standards for Municipal Waterworks.

2.2.4 Surface water should not be permitted to run a distance greater than 150m in streets and 200m in lanes or swales without interception by a catch basin.

2.2.5 Manhole covers shall not have the name of any other municipality and must label "Storm Sewer" in the cover.

2.2.6 Foundation weeping tile drains shall be directly connected to the storm sewer system by gravity provided that the hydraulic grade line (HGL) at the storm sewer main will not cause surcharging at the property line. If a gravity connection is not feasible (e.g. shallow storm sewer mains, high HGL), the foundation weeping tile shall drain into a sump with pumped discharge to the storm service at the foundation wall. Backflow prevention devices are required on all weeping tile drainage systems to minimize backup of stormwater and should be installed in accordance with the National Plumbing Code of Canada. If underground connection is not available, sump pumps must discharge to the yard surface with a concrete splash pad.

2.2.7 Surface drainage from any public area shall not flow over any sidewalk.

2.2.8 Culverts shall be 450mm minimum diameter where open ditches are used.

## 2.3 Water Mains

- 2.3.1 Water Consumption Rates for new developments are as follows:
  - a. Residential developments
    - Average Day Demand (ADD)= 270 Liters/capita/day
  - b. Industrial/Institutional/Commercial developments
    - ADD = 8.0 m<sup>3</sup>/ha/day
  - c. Peaking Factors for both residential and non-residential developments shall be as follows:
    - Maximum Day Demand = 2 x ADD
    - Peak Hourly Demand (PHO)= 4 x ADD
- 2.3.2 Water mains shall be PVC in accordance with the latest AWWA and CSA Standards.
- 2.3.3 Hydrants shall be compression type as manufactured by Clow, Brigadier M67 with triangular operating units. Hydrants shall be red with black caps and top in color and shall have 2.5" thread side ports and 5" STORZ quick connect pumper port.
- 2.3.4 Hydrant spacing in residential areas to be a maximum of 180m with one hydrant being within 90m of the front of any building. For industrial, commercial or institutional areas, maximum hydrant spacing will be 90m. Hydrant spacing to be measured along the centerline of the right of way.
- 2.3.5 Water valves shall open counterclockwise and come with rods and dust covers installed in all valve boxes.
- 2.3.6 The level of service criteria for the operating pressures of the water distribution system shall be in accordance with the Alberta· Environment and Parks - Guidelines for Municipal Waterworks and summarized as follows:
  - a. Minimum System Pressure = 350 kPa (50 psi)
  - b. Minimum System Pressure During Fire Flow = 150 kPa (22 psi)
  - c. Maximum System Pressure = 550 kPa (80 psi)
  - d. Maximum Allowable Velocity in Distribution System= 3.0 m/s
- 2.3.7 Due to current system limitation, all new Industrial, Commercial, Institutional developments will be responsible for their own on-site fire protection to achieve the required fire flow as calculated in accordance with the Fire Underwriters Survey (FUS) - Water Supply for Public Fire Protection (current edition).
- 2.3.8 Concrete curbs and gutters or sidewalk should be stamped with a 'CC' stamp at valve location for residential and commercial.
- 2.4 Service Connections
  - 2.4.1 Water service lines shall be series Pex Pipe (Crosslinked Polyethylene Pipe), minimum 25mm in size.
  - 2.4.2 Lots for semi-detached and multiple units shall have one separate service for each unit.
  - 2.4.3 Curb stands shall be marked with a wooden 2X4 extended 1m above finished

grade.

2.4.4 Services shall generally be installed in the center of the lot avoiding installation under any driveways. The services shall be terminated at minimum 5.0m inside the property line subject to the presence of shallow utilities easement.

2.4.5 Pre-servicing for industrial lots, if required, shall be a minimum of 150mm for sanitary and 50mm of water but subject to end-user requirements. The services shall be terminated at minimum 5.0m inside the property line subject to the presence of shallow utilities easement. Service valves shall remain closed and uncharged until the property is developed.

## 2.5 Roadway

2.5.1 Roadway and right-of-way widths shall follow the guidelines set out in Appendix A:

2.5.2 Roadway widths shall be measured from lip of gutter.

2.5.3 Structural sections of roadway shall meet or exceed the following:

MATERIAL	PAVEMENT STRUCTURE
<b>Residential Roadways</b>	
80mm Pit Run Gravel Sub-base	200mm
25mm Crushed Gravel Base	100mm
Asphalt Concrete	80mm (50mm + 30mm) <sup>1</sup>
<b>Collector Roadways</b>	
80mm Pit Run Gravel Sub-base	200mm
25mm Crushed Gravel Base	100mm
Asphalt Concrete	140mm (100mm + 40mm) <sup>1</sup>
<b>Major Collector Roadways and Industrial Roadways</b>	
80mm Pit Run Gravel Sub-base	300mm
25mm Crushed Gravel Base	100mm
Asphalt Concrete	160mm (120mm + 40mm) <sup>1</sup>
<i>1. First and second lifts respectively</i>	

The proposed pavement structure shall be supported by a structural pavement design prepared by a qualified Geotechnical Engineer and approved by the Village.

## 2.6 Sidewalks, Curb and Gutter

2.6.1 In residential areas curb and gutter shall be low profile rolled section except adjacent to reserves where standard faced curbs shall be constructed. For commercial, industrial, or major collector roadways with no driveway accesses, standard faced curb shall be constructed.

2.6.2 Sidewalks on residential areas shall be low profile rolled monolithic curb and gutter with a sidewalk width of 1.10m. Where standard faced curbs are required, the width shall increase to 1.21m. For collector roads and adjacent to school sites or commercial areas, the sidewalk width shall be increased by 0.40m to 1.50m and 1.61m for rolled and standard faced monolithic sidewalk respectively.

2.6.3 Sidewalks are required on both sides of all public roads.

- 2.6.4 Surface drainage from any public area shall not flow over any sidewalk.
- 2.6.5 Wheelchair ramps are required at all intersections and designated crosswalks. Wheelchair ramps are not allowed to be located within driveways.
- 2.6.6 Gutter widths shall be 0.25m except for major collector roadways which shall be 0.50 m.
- 2.6.7 The structural gravel pit run section shall be placed beneath all concrete sidewalks, curb, and gutter with a top layer of 20mm crushed road gravel to a minimum distance of 150mm behind the concrete structure.
- 2.6.8 Streetlight installation should only be started after completion of surface works.
- 2.6.9 Minimum radii for curb returns shall be 9m for residential local roadways, 10m for collector roadways and 15m for major collectors and industrial roadways.

## 2.7 Landscaping

- 2.7.1 Each residential lot shall have a minimum of one 35mm caliper tree in the front yard but outside of the utility right of way.
- 2.7.2 For all MR, walkways, major collector boulevards and PUL's, the Developer shall prepare a detailed landscaping plan for approval by the Village.
- 2.7.3 Major collector roadways shall require one 35 mm caliper deciduous tree for every lot but placed outside of the utility right of way.
- 2.7.4 For MR's and walkways as a minimum, the Developer shall install one 35mm caliper tree and 10 shrubs for every 100 square meters of area and as a minimum, no less than 10 per parcel. Trees and shrubs shall be planted in bed clusters with mulch and edging for ease of grass cutting. For PUL's shrubs will be required but large caliper trees will not be permitted.
- 2.7.5 Ratio of deciduous to coniferous trees shall be 3 to 1. Poplar trees will not be permitted. The type of trees and shrubs selected shall be Village approved trees. The full listing is attached - Appendix B. Any trees or shrubs not on the listing shall require approval through the Village and listed in the Developer's agreement.

## 2.8 Pathways

- 2.8.7 All pathways where required shall be asphalt paved 2.50m in width with 1.0m buffer strip on each side to a maximum slope of 5:1.

## 2.9 Traffic Control, Signage, Line Painting and Road Markings

- 2.9.1 All traffic control, signage, line painting and road markings shall conform to the Transportation Association of Canada's Manual of Uniform Traffic Control Devices of Canada. For subdivision development projects, the Developer shall include signage and pavement marking plans in their engineering drawing submissions for Village of Acme's review.
- 2.9.2 Upon approval by the Village and following construction of the roadways, the Developer will install all signage and pavement markings.
- 2.9.3 All signs to be high intensity retro reflective sheeting with 3M finish.
- 2.9.4 All pedestrian crossing signs to have "No Parking within 5 meters of Crosswalk" at the bottom of the sign in black letters.

- 2.9.5 Painted markings for pedestrian crossings must align to wheelchair ramps on both sides of the crossing.
- 2.9.6 Pedestrian crosswalks in schools shall be Zebra Bar style painted markings.
- 2.10 Shallow Utility Servicing
  - 2.10.1 The Developer is responsible for coordinating with shallow utility companies to determine servicing requirements for the development.
  - 2.10.2 The Developer shall submit the shallow utilities design to the Village for review and approval as part of the detailed design submission for municipal improvements. A letter from each shallow utility company shall be submitted by the Developer to the Village agreeing to the requirements and/or conditions resulting from the Village review of shallow utilities drawings.
  - 2.10.3 Upon approval of the design drawings, the Developer shall arrange for design and installation of shallow utility servicing either with the shallow utility provider or their approved private sector contractors according to current provincial or federal codes for the utility.
  - 2.10.4 Testing, inspections and construction monitoring shall be provided by the shallow utility company or the consulting engineer and upon completion, shall verify the installation was completed to the proper code or standard. Energizing the lines shall be done by the shallow utility companies.
  - 2.10.5 As built drawings for each shallow utility service shall be submitted to the Village following completion of the work.
  - 2.10.6 Engineering Society of North America (IESNA) Street and walkway lighting shall be in accordance with the Illuminating guidelines.
  - 2.10.7 Street lighting shall be "dark sky compliant" in accordance with the model lighting ordinance developed by IESNA and the International Dark-Sky Association (IDA).
  - 2.10.8 Light-emitting diode (LED) shall be used in all new lighting installations unless otherwise approved by the Village.
- 2.11 Park and Recreation Facilities
  - 2.11.1 Requirements for park and recreation facilities such as playgrounds, playing fields and other facilities shall be identified during the conceptual planning stage of a proposed development.
  - 2.11.2 Park areas shall be graded, loamed, grassed, and landscaped according to the approved design drawings.
  - 2.11.3 For park areas or Public Utility Lots (PUL), a fencing plan shall be submitted to the Village for review and upon approval shall be installed to prevent vehicle access to the area other than maintenance equipment and pedestrians.
  - 2.11.4 The Developer shall install uniform fencing for lots backing onto park areas as per approved by the Village.
  - 2.11.5 The Developer shall prepare a detailed drawing outlining the recreational facilities for approval by the Village. The recreational facilities shall be in accordance with the latest version of the City of Calgary's Development Guidelines and Standard Specifications: Landscape Construction.

- 2.11.6 The Developer shall install the recreational park, playground, playing field or any other facilities according to the approved plan and specifications once Building Permits have been issued to 50% of the lots within the development area. The Developer shall maintain the facilities for a period of two (2) years or upon FAC sign-off.
- 2.11.7 Public benches will require approval from the Village and must be placed on a 2" concrete slab base.
- 2.11.8 Park areas shall be provided with Village approved dog stations, garbage receptacles, and benches.

## 2.12 Fencing

- 2.12.1 Uniform fencing may be required for screening, perimeter fencing or along backs of lots adjacent to park areas. The Developer shall submit a detailed fencing plan together with the landscape plan as per the latest version of the City of Calgary's Development Guidelines and Standard Specifications: Landscape Construction for approval by the Village.
- 2.12.2 The selection of fencing material shall take into account the yearly maintenance and life cycle replacement which are important considerations by the Village when reviewing the fencing plan. The fencing shall be located on private property where practical.
- 2.12.3 The Developer shall construct the fencing according to the approved design drawings and specifications and maintain the fencing for a period of two (2) years or upon FAC sign-off.

## 2.13 Erosion and Sediment Control

- 2.13.1 An Erosion and sediment Control (ESC) plan based on good housekeeping practices must be submitted for all new developments together with the engineering detailed design drawings for Village review.
- 2.13.2 The Developer or its designated representative such as the Engineering Consultant shall ensure proper construction, implementation, and maintenance of all ESC measures as per the approved ESC plan. The Village reserves the right to require additional ESC devices to be installed as sees fit based on the site condition.
- 2.13.3 As-built drawings must indicate the location of curb stops by GPS UTM grid coordinates. Shapefiles shall be submitted for all utilities.

## 2.14 Maintenance Periods

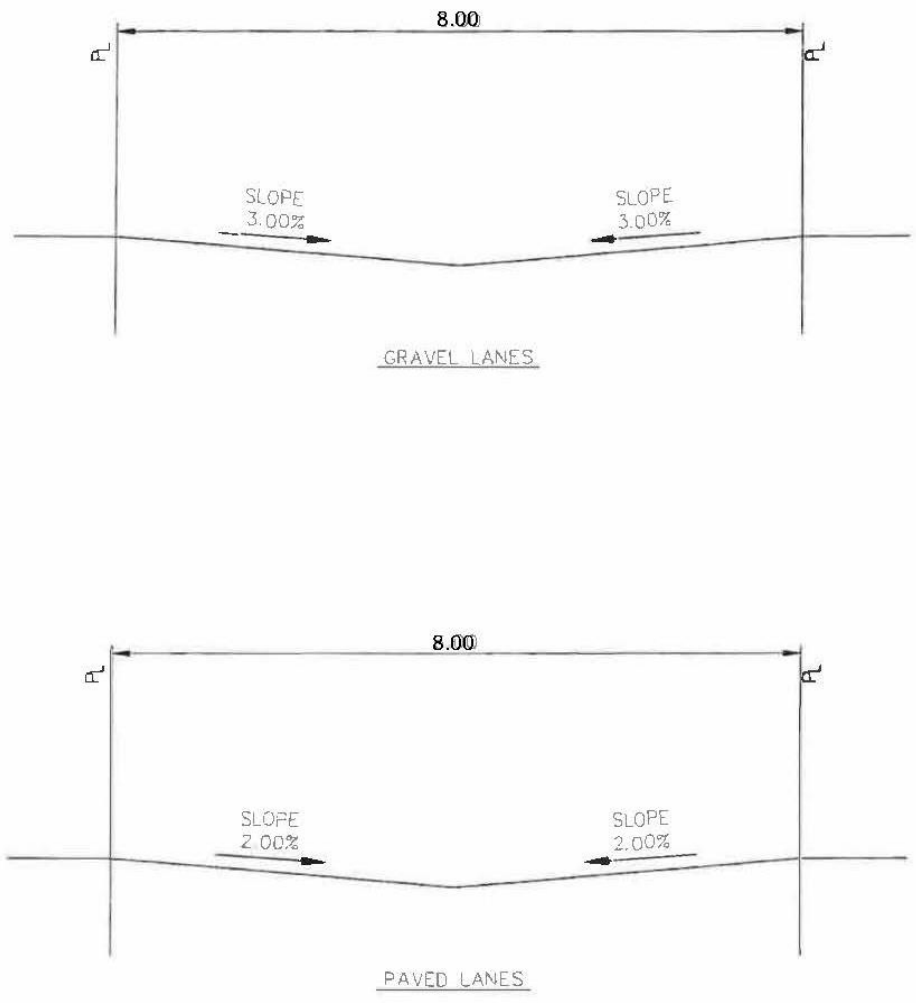
- 2.14.1 Maintenance Annually
  - a. Storm
  - b. Sanitary
  - c. Water
  - d. Service Connections
- 2.14.2 Maintenance every two (2) years or two (2) winters
  - a. Concrete
  - b. Asphalt



- c. Catch Basins
- 2.14.3 Maintenance every two (2) years
  - a. Landscaping

**Appendix A**  
**Village of Acme**  
**Construction and Infrastructure Design Standards**  
**TYPICAL ROAD CROSS SECTIONS**

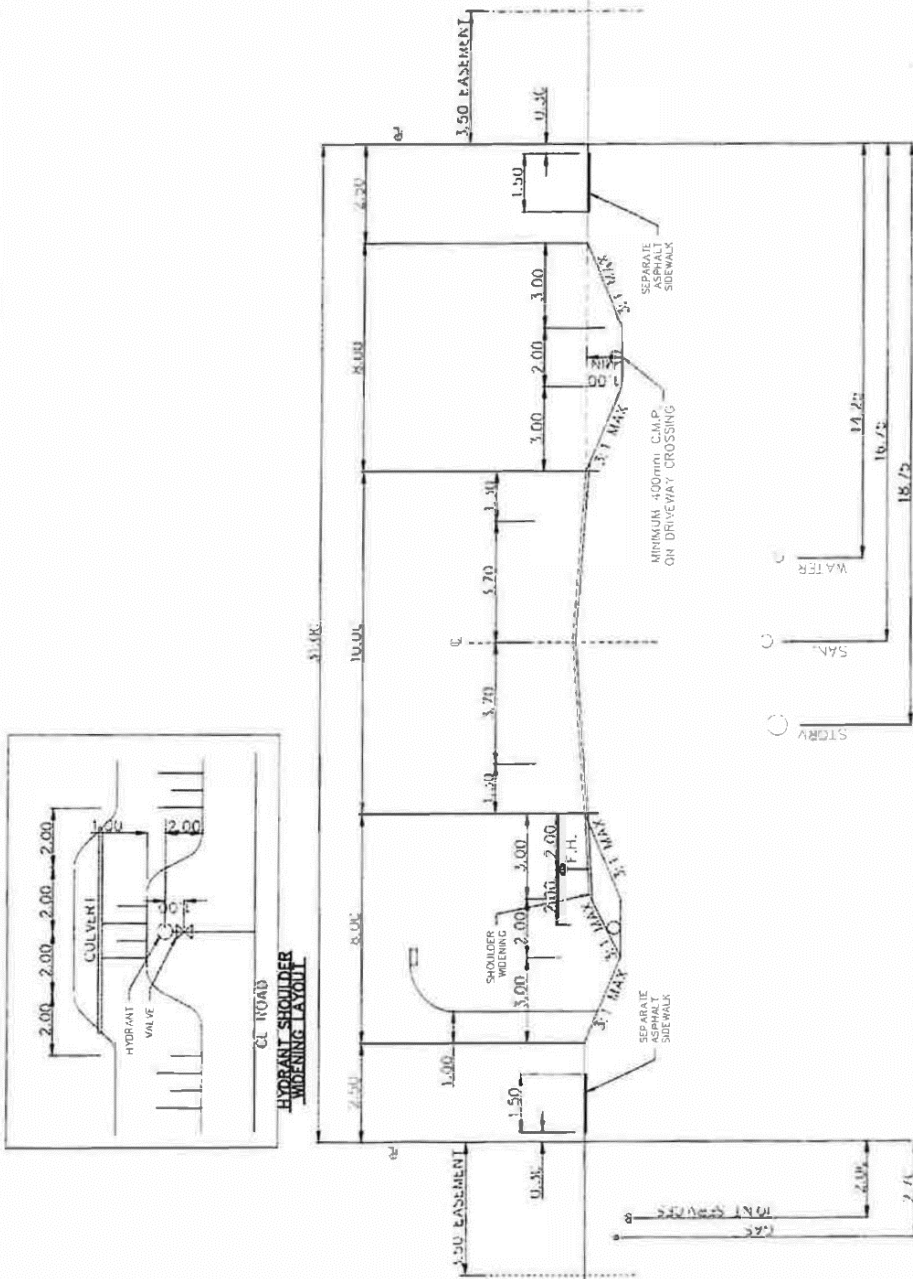
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All measurements are in meters unless otherwise noted.

No.	Date	Revision	App'd	Drawn:	Date:
				Scale:	
				N.T.S.	
				Approved by:	
				MUNICIPAL ENGR.	

LANE STRUCTURES  
6.0m WIDTHS  
  
FIGURE 6.0



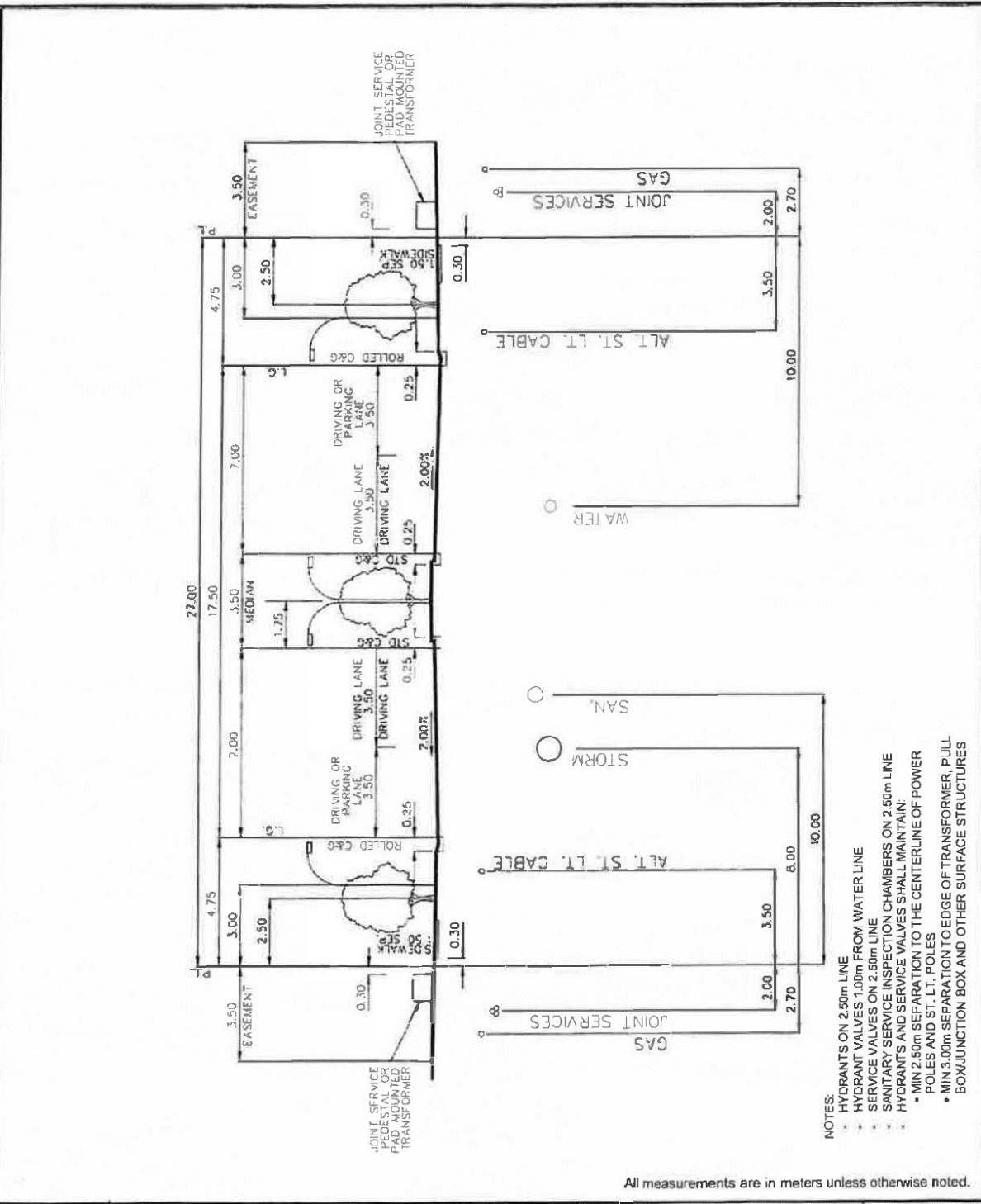
- NOTES:
- HYDRANTS ON 8.50m LINE ON BLVD. SIDE
  - HYDRANT VALVES 1.00m FROM WATER LINE
  - SERVICE VALVES ON 2.20m LINE
  - SANITARY SERVICE INSPECTION CHAMBERS ON 2.20m LINE
  - HYDRANTS AND SERVICE VALVES SHALL MAINTAIN:
    - MIN 2.50m SEPARATION TO THE CENTERLINE OF POWER POLES AND ST. LT. POLES
    - MIN 3.00m SEPARATION TO EDGE OF TRANSFORMER, PULL BOX/JUNCTION BOX AND OTHER SURFACE STRUCTURES

All measurements are in meters unless otherwise noted.

No.	Date	Revision	App'd	Drawn	Date	Scale	Approved by:	RURAL UNDIVIDED INDUSTRIAL COLLECTOR & LOCAL ROADWAY	FIGURE 4.0
						N.T.S.	MUNICIPAL ENGR.		



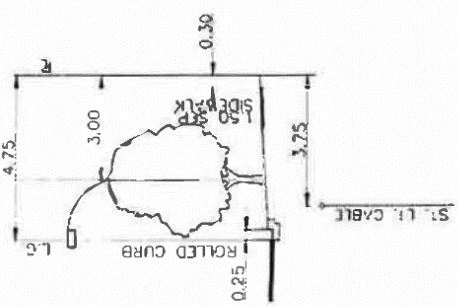
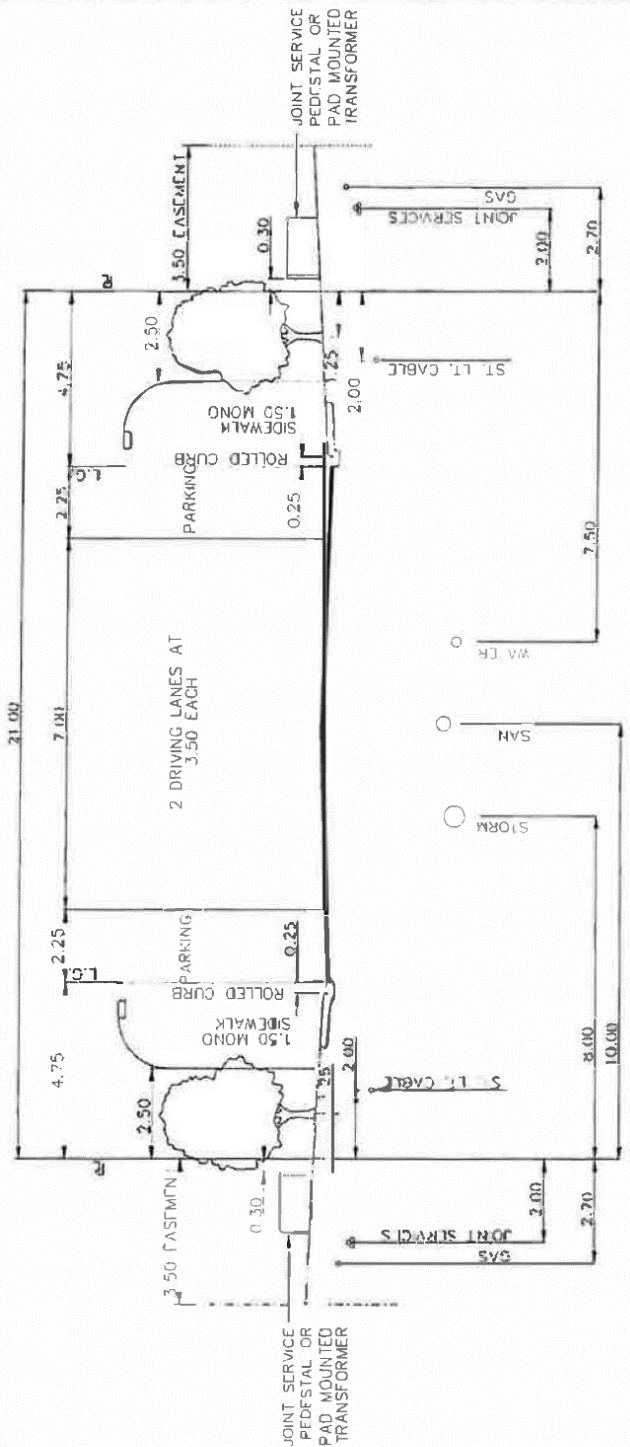
No. Date Revision App'd  
 Scale: N.T.S.  
 Approved by: MUNICIPAL ENGR.  
 Figure 2.0  
 PRIMARY COLLECTOR DIVIDED  
 All measurements are in meters unless otherwise noted.



- NOTES:
- HYDRANTS ON 2.50m LINE
  - HYDRANT VALVES 1.00m FROM WATER LINE
  - SERVICE VALVES ON 2.50m LINE
  - SANITARY SERVICE INSPECTION CHAMBERS ON 2.50m LINE
  - HYDRANTS AND SERVICE VALVES SHALL MAINTAIN:
    - MIN 2.50m SEPARATION TO THE CENTERLINE OF POWER POLES AND ST. LT. POLES
    - MIN 3.00m SEPARATION TO EDGE OF TRANSFORMER, PULL BOX/JUNCTION BOX AND OTHER SURFACE STRUCTURES

All measurements are in meters unless otherwise noted.

No.	Date	Revision	App'd	Drawn:	Date:	PRIMARY COLLECTOR DIVIDED	FIGURE 2.0
				Scale:	N.T.S.		
				Approved by:	MUNICIPAL ENGR.		

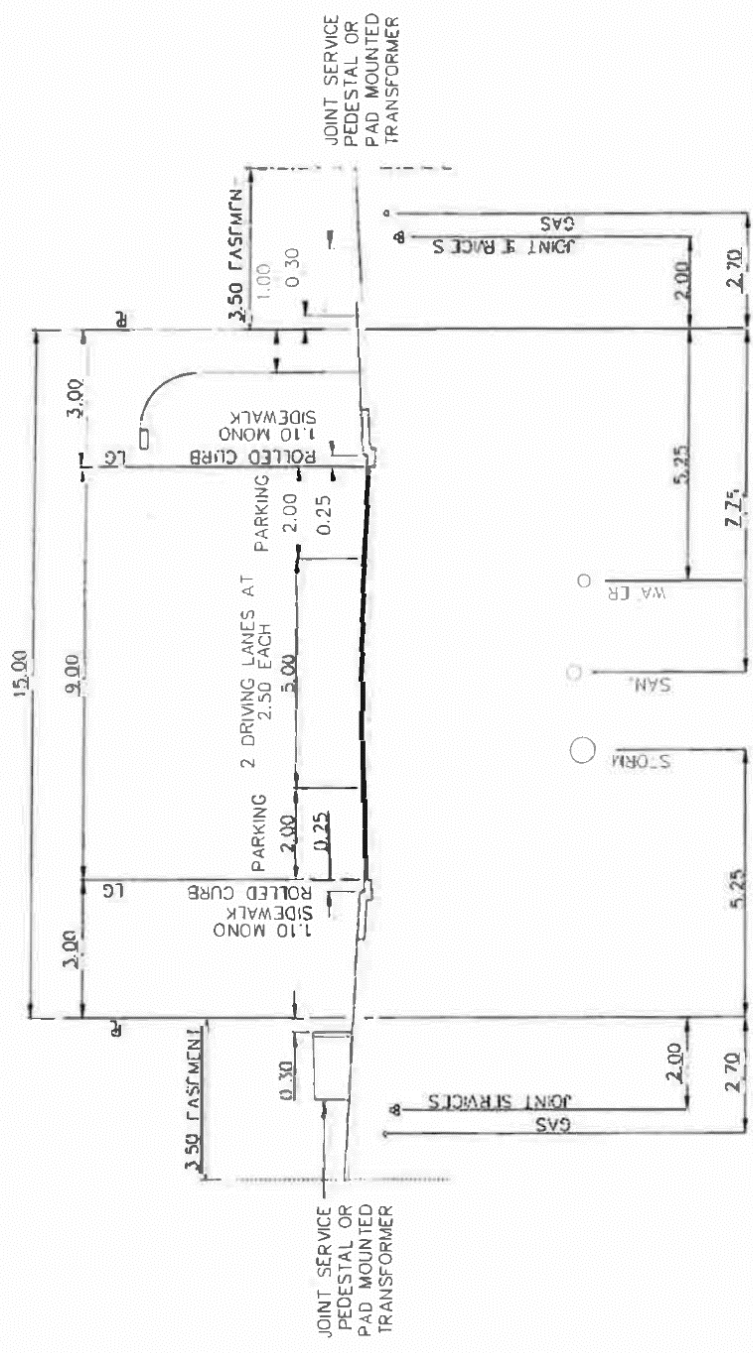


ALTERNATE WITH SEPARATE SIDEWALK ON BOTH SIDES

- NOTES:
- HYDRANTS ON 1.25m LINE WITH 1.50m MONOWALK OR 2.50m LINE WITH 1.50m SEPARATE WALK
  - HYDRANT VALVES 1.00m FROM WATER LINE
  - SERVICE VALVES ON 1.25m LINE WITH 1.50m MONOWALK OR 2.50m LINE WITH 1.50m SEPARATE WALK
  - SANITARY SERVICE INSPECTION CHAMBERS ON 1.25m LINE WITH 1.50m MONOWALK OR 2.50m LINE WITH 1.50m SEPARATE WALK
  - HYDRANTS AND SERVICE VALVES SHALL MAINTAIN:
    - MIN 2.50m SEPARATION TO THE CENTERLINE OF POWER POLES AND ST. LT. POLES
    - MIN 3.00m SEPARATION TO EDGE OF TRANSFORMER, PULL BOX/JUNCTION BOX AND OTHER SURFACE STRUCTURES

All measurements are in meters unless otherwise noted.

				Drawn: _____ Date: _____ Scale: N.T.S. Approved by: MUNICIPAL ENGR.
No.	Date	Revision	App'd	RESIDENTIAL COLLECTOR UNDIVIDED - PARKING BOTH SIDES 21m R.O.W. - 12.00m ROAD FIGURE 3.0



- NOTES:
- HYDRANTS ON 0.50m LINE
  - HYDRANT VALVES 1.00m FROM WATER LINE
  - SERVICE VALVES ON 0.30m LINE
  - SANITARY SERVICE INSPECTION CHAMBERS ON 0.30m LINE
  - HYDRANTS AND SERVICE VALVES SHALL MAINTAIN:
    - MIN 2.50m SEPARATION TO THE CENTERLINE OF POWER POLES AND ST. LT. POLES
    - MIN 3.00m SEPARATION TO EDGE OF TRANSFORMER, PULL BOX/JUNCTION BOX AND OTHER SURFACE STRUCTURES

All measurements are in meters unless otherwise noted.

Drawn:		Date:	RESIDENTIAL LOCAL - PARKING BOTH SIDES 15.00m R.O.W. - 9.00m ROAD	
Scale:		N.T.S.		
Approved by:		MUNICIPAL ENGR.		
No.	Date	Revision	App'd	FIGURE 1.0



**Appendix B**  
**Village of Acme**  
**Construction and Infrastructure Design Standards**

**Aspen**

Trembling  
Swedish Columnar

**Birch**

Weeping  
Paper  
Dakota Pinnacle

**Buckeye**

Ohio

**Cedar****Crab**

Makamik Flowering

**Fir**

Douglas

**Hawthorne**

Snowbird  
Toba

**Larch**

Siberian

**Lilac**

Ivory Silk / Japanese

**Maple**

Manitoba

**Oak**

Bur

**Pine**

Lodgepole  
Ponderosa

**Spruce**

Colorado  
Scotch  
White

**Appendix C**  
**Village of Acme**  
**Construction and Infrastructure Design Standards**  
**Form – Construction Commencement Notification**



**Construction Commencement Notification**

Development Agreement # \_\_\_\_\_

Developer \_\_\_\_\_ Subdivision/Phase \_\_\_\_\_

Consultant \_\_\_\_\_ Consultant's Representative \_\_\_\_\_

Contractor \_\_\_\_\_ Contractor's Representative \_\_\_\_\_

Phone Number \_\_\_\_\_

**Construction on the above noted subdivision will commence on:**

\_\_\_\_ / \_\_\_\_ / \_\_\_\_ at \_\_\_\_\_ am / pm  
(time)

Inspection will be required from The Village of Acme

For \_\_\_\_\_  
(Utility)  
\_\_\_\_\_  
\_\_\_\_\_

\_\_\_\_\_  
Consultant/Contractor Signature

\_\_\_\_\_  
Date

**The Village of Acme gives \_\_\_\_\_ permission to commence construction.**  
(Name)

\_\_\_\_\_  
Village of Acme

\_\_\_\_\_  
Date