Regular Council Meeting
Town of Sundre Municipal Council Chambers
February 12, 2024
6:00 p.m.

1. Call to Order
Moment of Reflection

2. Public Hearing: None

3. Agenda – Amendments and Adoption
3.1 February 12, 2024
3.2 Councillor Absence

4. Adoption of Previous Minutes
4.1 January 22, 2024 Regular Meeting of Council Pg. 1
4.2 February 5, 2024 Special Closed Meeting of Council Pg. 4

5. Delegation:
5.1 Sundre RCMP Detachment NCO – 3rd Quarter Reports Pg. 5

6. Bylaws/Policies: None

7. Old Business: None

8. New Business:
8.1 RFD Spray Patch Equipment Pg. 15
8.2 RFD Development Design Guidelines Pg. 16

9. Administration: None

10. Municipal Area Partnership (MAP): None

11. Council Committee Reports: None

12. Council Invitations / Correspondence: None

13. Closed Meeting:
13.1 Advice From Officials, *FOIPP Act, Section 24*
13.2 Advice From Officials, *FOIPP Act, Section 24*
13.3 Advice From Officials, *FOIPP Act, Section 24*
13.4 Advice From Officials, *FOIPP Act, Section 24*

14. Adjournment

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Regular Council Meeting Minutes
Town of Sundre
Municipal Council Chambers
January 22, 2024

The regular meeting of the Council of the Municipality of Sundre was held in the Municipal Council Chambers on Monday, January 22, 2024, commencing at 6:00 p.m.

IN ATTENDANCE: Mayor Richard Warnock
Councillor Connie Anderson
Councillor Owen Petersen
Councillor Todd Dalke
Councillor Jaime Marr
Councillor Paul Isaac
Councillor Chris Vardas

ABSENT: None

STAFF: Chief Administrative Officer, Linda Nelson
Director Corporate Services, Chris Albert
Manager, Planning and Community Services, Benazir Thaha Valencia
Community Peace Officer, Sam Zhao
Administrative Support, Betty Ann Fountain

PUBLIC: 2, including Karen Fahrlander of Red Deer River Watershed Alliance

PRESS: 1

CALL TO ORDER: The meeting was called to order at 6:00 p.m., with a moment of reflection on the business of the evening.

PUBLIC HEARING: None

AGENDA – AMENDMENTS AND ADOPTION:

Res. 011-22-01-24 MOVED by Councillor Vardas that the agenda be approved as amended as follows:

ADD to New Business: 8.1 RFD Mid-Sized Towns Mayor's Caucus

CARRIED

Councillor Absence: None

ADOPTION OF THE PREVIOUS MINUTES:

Res. 012-22-01-24 MOVED by Councillor Anderson that the Minutes of the Regular Council Meeting of Council held on January 8, 2024, be approved as presented.

CARRIED

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Initials

DELEGATION: **Red Deer River Watershed Alliance Board Member**

Res. 013-22-01-24 MOVED by Councillor Isaac that the Town of Sundre Council accept the presentation by Karen Fahrlander, Board Member of the Red Deer River Watershed Alliance, as information.

CARRIED

BYLAWS /POLICIES: None

OLD BUSINESS: None

NEW BUSINESS: **Mid-Sized Towns Mayor's Caucus**

Res. 014-22-01-24 MOVED by Councillor Anderson that the Town of Sundre Council approve the membership in the Mid-Sized Towns Mayor's Caucus as per the Terms of Reference and agrees to pay the $250 membership.

CARRIED

ADMINISTRATION: **Community Peace Officer Annual Report**

Res. 015-22-01-24 MOVED by Councillor Dalke that the Town of Sundre Council accept the Community Peace Officer's annual report as information.

CARRIED

December Departmental Reports and 2023 Year-End Reports

Res. 016-22-01-24 MOVED by Councillor Isaac that the Town of Sundre Council accept the December and 2023 Year-End Departmental Reports as information.

CARRIED

MUNICIPAL AREA PARTNERSHIP: None

COUNCIL REPORTS: **Council Committee Reports**

Res. 017-22-01-24 MOVED by Councillor Petersen that the Town of Sundre Council accept Mayor Warnock's report for December 2023 as information.

CARRIED

Res. 018-22-01-24 MOVED by Councillor Anderson that the Town of Sundre Council accept Councillor Marr's report for October, November, and December 2023 as information.

CARRIED

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Initials

Council Key Messages **2023 Council Key Messages**

Res. 019-22-01-24 MOVED by Councillor Isaac that the Town of Sundre accept the Key Messages of Council for the Year 2023 as information.

CARRIED

COUNCIL INVITATIONS / CORRESPONDENCE: None

CLOSED MEETING

Res. 020-22-01-24 MOVED by Councillor Isaac that the Town of Sundre Council go into a closed meeting at 7:27 p.m.

CARRIED

Mayor Warnock called a 5 minute recess at 7:27 p.m.
Mayor Warnock resumed the meeting at 7:32 p.m.

The following were in attendance for the closed meeting session:
Staff: Chief Administrative Officer, Linda Nelson

Topic of Closed Meeting

13.1 Advice from Officials*, FOIPP Act Section 24;*
13.2 Local Public Body Confidences, *FOIPP Act Section 23*;

Res.021-22-01-24 MOVED by Councillor Petersen that Council return to an open meeting at 8:05 p.m.

ADJOURNMENT

Res.022-22-01-24 MOVED by Councillor Anderson being that the agenda matters have been concluded the meeting adjourned at 8:05 p.m.

CARRIED

These Minutes approved this 12th Day of February 2024.

Mayor, Richard Warnock

Chief Administrative Officer, Linda Nelson

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Initials

Special Council Meeting
Town of Sundre Municipal Council Chambers
Minutes
February 5, 2024

The special closed meeting of Council of the Municipality of Sundre was held in Council Chambers in the Municipal Office on Monday, February 5, 2024, commencing at 3:00 p.m.

ATTENDING: Mayor Richard Warnock
Councillor Connie Anderson
Councillor Owen Petersen
Councillor Todd Dalke
Councillor Jaime Marr
Councillor Paul Isaac
Councillor Chris Vardas

Absent: None

Staff: Chief Administrative Officer, Linda Nelson

CALL TO ORDER The special closed meeting of Council was called to order at 3:05 p.m.

AGENDA – AMENDMENTS AND ADOPTION:

Res. XXX-05-02-24 MOVED by Councillor Petersen that the agenda be approved as presented.

CARRIED

CLOSED MEETING

Res. XXX-05-02-24 MOVED by Councillor Anderson that Council go into closed meeting at 3:06 p.m.

CARRIED

RETURN TO OPEN MEETING

Res. XXX-05-02-24 MOVED by Councillor Isaac that Council return to open meeting at 4:15 p.m.

CARRIED

ADJOURNMENT

Res. XXX-05-02-24 MOVED by Councillor Vardas being that the agenda matters have been concluded the meeting adjourned at 4:15 p.m.

CARRIED

These Minutes approved this 12th day of February 2024

Mayor, Richard Warnock

Chief Administrative Officer, Linda Nelson

TOWN OF SUNDRE

REQUEST FOR DECISION

COUNCIL DATE	**February 12, 2024**
SUBJECT	**Delegation: Sundre RCMP Detachment NCO i/c**
ORIGINATING DEPARTMENT	**Legislative Services**
AGENDA ITEM	**5.1**

BACKGROUND/PROPOSAL:
The Detachment NCO i/c is appearing before Council to present the 3rd Quarter Sundre Provincial Community Report for the Sundre RCMP Detachment.

DISCUSSION/OPTIONS/BENEFITS/DISADVANTAGES:
Verbal discussion and presentation of report.

ALIGNMENT WITH STRATEGIC PLAN
Aligns with Pillar 5 of Strategic Plan, Sustainable & Responsible Governance

ADMINISTRATION RECOMMENDATIONS:
That Council thank the Detachment NCO for attending Council and accept the 3rd Quarter Sundre Provincial Community Report as information.

MOTION:
That the Town of Sundre Council thank the Detachment NCO for attending Council and accept the 3rd Quarter Sundre Provincial Community Report as information.

ATTACHMENTS:
RCMP 3rd Quarter Sundre Provincial Community Report

Date Reviewed: February 7, 2024 CAO: Linda Nelson

January 29, 2024

Sgt Trent Sperlie
NCO i/c RCMP
Sundre, Alberta

Dear Mayor Warnock,

Please find the quarterly Community Policing Report attached that covers the October 1st to December 31st, 2023 reporting period. The attached report serves to provide a quarterly snapshot of the human resources, financial data and crime statistics for the Sundre Detachment.

I would also like to update you on one of our current technological endeavours. Over the last decade, the RCMP has utilized Remotely Piloted Aircraft Systems (RPAS) to support our specialized units, i.e. our Emergency Response Teams – which has been incredibly effective for enhancing police and public safety. Although the advancement of technology benefits industry and recreation, it facilitates greater accessibility for criminals, which requires a strategic response. To remain current in our ever-changing environment, and to be responsive to public reviews that call for better access to air support such as the Nova Scotia Mass Casualty Commission of Inquiry, we are actively researching and testing new technologies in a policing environment to enhance public safety. One such technology is how we might use RPAS for potential new police applications. This includes how we might use RPAS to assist with select calls for service, crime photography, search and rescue, and unfolding critical incidents, i.e. an active shooter. With its potential and capability for wider applications, we are further considering program options for our municipal, rural, and Indigenous communities; scalable depending on community need and interest. While we will always need a helicopter and fixed-wing aircraft for the movement of resources, these larger assets are not always immediately available. RPAS technology is providing an opportunity for our communities to effectively have their own police air support, at a significantly lower cost. As I learn more about further opportunities and challenges, I will be sure to keep you updated and informed.

Your ongoing engagement and the feedback you provide guides our Detachment team, and supports the reinforcement of your policing priorities. I always remain available to discuss your community-identified policing priorities and/or any ideas you may have that will enhance our service delivery to address the priorities that are important to you. As the Chief of Police for your community, I invite you to contact me should you have any questions or concerns.

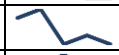
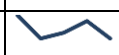
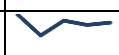
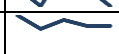
Sgt Trent Sperlie
NCO i/c
Sundre Detachment

RCMP·GRC
ROYAL CANADIAN MOUNTED POLICE • GENDARMERIE ROYALE DU CANADA

Sundre Provincial Detachment
Crime Statistics (Actual)
Q4: 2019 - 2023

All categories contain "Attempted" and/or "Completed"

January 5, 2024

CATEGORY	Trend	2019	2020	2021	2022	2023	% Change 2019 - 2023	% Change 2022 - 2023	Avg File +/- per Year
Offences Related to Death		0	0	0	0	1	N/A	N/A	0.2
Robbery		0	4	4	0	0	N/A	N/A	-0.4
Sexual Assaults		1	2	2	0	0	-100%	N/A	-0.4
Other Sexual Offences		3	4	0	1	0	-100%	-100%	-0.9
Assault		20	14	24	12	19	-5%	58%	-0.4
Kidnapping/Hostage/Abduction		1	0	0	1	1	0%	0%	0.1
Extortion		0	0	0	0	1	N/A	N/A	0.2
Criminal Harassment		7	4	4	2	1	-86%	-50%	-1.4
Uttering Threats		10	15	11	6	5	-50%	-17%	-1.9
TOTAL PERSONS		**42**	**43**	**45**	**22**	**28**	**-33%**	**27%**	**-4.9**
Break & Enter		20	14	17	8	14	-30%	75%	-1.8
Theft of Motor Vehicle		10	4	12	2	10	0%	400%	-0.2
Theft Over $5,000		5	8	1	4	7	40%	75%	0.0
Theft Under $5,000		37	15	12	15	16	-57%	7%	-4.2
Possn Stn Goods		6	2	3	5	2	-67%	-60%	-0.5
Fraud		17	7	14	12	13	-24%	8%	-0.3
Arson		1	0	2	1	0	-100%	-100%	-0.1
Mischief - Damage To Property		24	15	21	17	17	-29%	0%	-1.2
Mischief - Other		10	5	12	14	12	20%	-14%	1.3
TOTAL PROPERTY		**130**	**70**	**94**	**78**	**91**	**-30%**	**17%**	**-7.0**
Offensive Weapons		9	6	5	13	1	-89%	-92%	-0.9
Disturbing the peace		6	5	2	8	3	-50%	-63%	-0.3
Fail to Comply & Breaches		28	16	7	21	14	-50%	-33%	-2.3
OTHER CRIMINAL CODE		13	12	4	6	11	-15%	83%	-1.0
TOTAL OTHER CRIMINAL CODE		**56**	**39**	**18**	**48**	**29**	**-48%**	**-40%**	**-4.5**
TOTAL CRIMINAL CODE		228	152	157	148	148	-35%	0%	-16.4

Sundre Provincial Detachment
Crime Statistics (Actual)
Q4: 2019 - 2023

All categories contain "Attempted" and/or "Completed"

January 5, 2024

CATEGORY	Trend	2019	2020	2021	2022	2023	% Change 2019 - 2023	% Change 2022 - 2023	Avg File +/- per Year
Drug Enforcement - Production		0	0	0	0	0	N/A	N/A	0.0
Drug Enforcement - Possession		0	1	0	1	0	N/A	-100%	0.0
Drug Enforcement - Trafficking		4	5	0	1	1	-75%	0%	-1.0
Drug Enforcement - Other		0	0	0	0	0	N/A	N/A	0.0
Total Drugs		**4**	**6**	**0**	**2**	**1**	**-75%**	**-50%**	**-1.0**
Cannabis Enforcement		0	0	1	0	0	N/A	N/A	0.0
Federal - General		1	3	0	2	0	-100%	-100%	-0.3
TOTAL FEDERAL		**5**	**9**	**1**	**4**	**1**	**-80%**	**-75%**	**-1.3**
Liquor Act		4	2	2	2	2	-50%	0%	-0.4
Cannabis Act		1	0	0	0	0	-100%	N/A	-0.2
Mental Health Act		11	9	15	18	18	64%	0%	2.3
Other Provincial Stats		18	24	22	26	21	17%	-19%	0.8
Total Provincial Stats		**34**	**35**	**39**	**46**	**41**	**21%**	**-11%**	**2.5**
Municipal By-laws Traffic		0	0	0	0	0	N/A	N/A	0.0
Municipal By-laws		2	4	3	2	3	50%	50%	0.0
Total Municipal		**2**	**4**	**3**	**2**	**3**	**50%**	**50%**	**0.0**
Fatals		0	0	0	0	0	N/A	N/A	0.0
Injury MVC		4	6	4	13	6	50%	-54%	1.1
Property Damage MVC (Reportable)		78	60	59	73	65	-17%	-11%	-1.3
Property Damage MVC (Non Reportable)		12	8	6	5	9	-25%	80%	-0.9
TOTAL MVC		**94**	**74**	**69**	**91**	**80**	**-15%**	**-12%**	**-1.1**
Roadside Suspension - Alcohol (Prov)		N/A	N/A	N/A	N/A	4	N/A	N/A	N/A
Roadside Suspension - Drugs (Prov)		N/A	N/A	N/A	N/A	0	N/A	N/A	N/A
Total Provincial Traffic		**298**	**256**	**192**	**108**	**206**	**-31%**	**91%**	**-33.2**
Other Traffic		**1**	**9**	**0**	**0**	**0**	**-100%**	**N/A**	**-1.1**
Criminal Code Traffic		**26**	**30**	**13**	**11**	**10**	**-62%**	**-9%**	**-5.1**
Common Police Activities									
False Alarms		**8**	**4**	**7**	**5**	**4**	**-50%**	**-20%**	**-0.7**
False/Abandoned 911 Call and 911 Act		**7**	**3**	**3**	**5**	**1**	**-86%**	**-80%**	**-1.0**
Suspicious Person/Vehicle/Property		**60**	**44**	**21**	**12**	**29**	**-52%**	**142%**	**-9.4**
Persons Reported Missing		**0**	**5**	**0**	**4**	**4**	**N/A**	**0%**	**0.7**
Search Warrants		**0**	**1**	**1**	**0**	**0**	**N/A**	**N/A**	**-0.1**
Spousal Abuse - Survey Code (Reported)		**32**	**26**	**23**	**8**	**14**	**-56%**	**75%**	**-5.4**
Form 10 (MHA) (Reported)		**0**	**2**	**0**	**1**	**1**	**N/A**	**0%**	**0.1**

RCMP Provincial Policing Report

Detachment	Sundre
Detachment Commander	Sgt. Trent Sperlie
Quarter	Q3
FTE Utilization Plan	2023/24
Date of Report	2024/01/29

Community Consultations

Date	October 12, 2023
Meeting Type	Community Connection
Topics Discussed	Fraud presentation at the Senior's Lodge.
Notes/Comments	

Date	October 15, 2023
Meeting Type	Community Connection
Topics Discussed	Meeting with Search and Rescue
Notes/Comments	

Date	October 26 to Oct 31, 2023
Meeting Type	Community Connection
Topics Discussed	Halloween safety school presentations
Notes/Comments	

Date	November 8 and November 11, 2023
Meeting Type	Community Connection
Topics Discussed	Remembrance Day ceremony attendance in red serge.
Notes/Comments	

Date	November 14, 2023
Meeting Type	Community Connection
Topics Discussed	Sundre Museum Metis display ceremony.
Notes/Comments	

Date	December 4, 2023
Meeting Type	Meeting with Elected Officials
Topics Discussed	Sundre Mayor and Council meeting to discuss quarter 2 statistics.
Notes/Comments	

Community Priorities

Priority 1	Be Clear, Accountable and Transparent
Current Status & Results	Red serge for Remembrance Day, red serge for unveiling of Metis display within Sundre, 1 Town Council meeting.

Priority 2	Crime Reduction
Current Status & Results	No initiatives identified for this quarter.

Priority 3	Enhance Awareness and Education
Current Status & Results	There were 13 mental health calls. 1 was dealt with through Form 10 and 2 were referred to RPACT. The others didn't have any grounds to Form 10. More RPACT referrals could be made.

Priority 4	Crime Reduction
Current Status & Results	55 speeding tickets issued and 9 speed warnings issued during this quarter. 1 JFO with Fish and Wildlife. A JFO with RCMP Traffic Services, Town of Sundre PO, Fish and Wildlife and Conservation is planned for late January 2024.

Crime Statistics[1]

The following table provides policing statistics on actual offences within the periods listed. Please see Appendix for additional information and a five-year comparison.

Category				January - December		
	2022	*2023*	*% Change Year-over-Year*	*2022*	*2023*	*% Change Year-over-Year*
Total Criminal Code	148	148	0%	833	674	-19%
Persons Crime	22	28	27%	133	163	23%
Property Crime	78	91	17%	518	366	-29%
Other Criminal Code	48	29	-40%	182	145	-20%
Traffic Offences						
Criminal Code Traffic	11	10	-9%	51	55	8%
Provincial Code Traffic	108	206	91%	470	524	11%
Other Traffic	0	0		1	1	0%
CDSA Offences	2	1	-50%	11	14	27%
Other Federal Acts	4	1	-75%	21	23	10%
Other Provincial Acts	46	41	-11%	189	214	13%
Municipal By-Laws	2	3	50%	14	12	-14%
Motor Vehicle Collisions	91	80	-12%	270	267	-1%

1. Data extracted from a live database (PROS) and is subject to change over time.

Trends/Points of Interest

-Persons Crime - Assault is the driving factor in the year to year increase in persons crime. The assaults for this quarter consist of 7 domestic assaults, 2 youth fights, 3 family fights, 3 bar fights, 1 road rage incident and 1 where motive and cause is unknown due to limited information from the victim. However, when looking at the 5 year statistics persons crime is down significantly from a high of 45 incidents in 2021 to 28 incidents for 2024. Charges have been laid in the majority of these assaults. 3 assaults occurred in MVC, 1 in CWC, 14 occurred in the Town of Sundre and 2 were outside the detachment area but Sundre assisted.

-Property Crime - Theft of motor vehicle is the driving factor in the property crime increase in the year to year comparison. This category is showing a 400% increase from 2 occurrences in 2022 to 10 occurrences in 2023. The thefts consist of 4 stolen motor vehicles, 1 theft of a truck with a side by side in the back, 1 theft of a trailer with a quad on it, 1 theft of grader and 1 quad runner stolen from a hunting camp in the backcountry. No charges have been laid in any of these thefts. Theft of motor vehicle is currently at the mid range of the 5 year statistics. 4 thefts occurred in MVC, 4 in Sundre, 1 in CWC and 1 in the MD of Bighorn.

-Break and enter - break and enters was evenly divided between commercial buildings and oil / gas sites. The occurences went up from 8 to 14 over the year to year comparison but is still at the low end of the 5 year comparison. 3 occurrences happened in MVC, 2 in Sundre and 5 in CWC.

Provincial Police Service Composition Table[2]

Staffing Category	Established Positions	Working	Soft Vacancies[3]	Hard Vacancies[4]
Police Officers	8	7	1	0
Detachment Support	2	2	0	0

2. Data extracted on December 31, 2023 and is subject to change.

3. Soft Vacancies are positions that are filled but vacant due to maternity/paternity leave, medical leave, etc. and are still included in the overall FTE count.

4. Hard Vacancies reflect positions that do not have an employee attached and need to be filled.

Comments

Police Officers: Of the eight established positions, 6 are working full operational duties, 1 soft vacancy in the Corporal position and the commander is administrative duties only. One of the Constables has been moved to the Corporal position in an acting capacity.

Detachment Support: Of the two established positions, two resources are working.

Quarterly Financial Drivers

Overtime was the significant financial driver over the last quarter.

TOWN OF SUNDRE

REQUEST FOR DECISION

COUNCIL DATE:	**February 12, 2024**
SUBJECT:	**Capital Budget Adjustment: Spray Patch Equipment**
ORIGINATING DEPARTMENT:	**Legislative Services**
AGENDA ITEM	**8.1**

BACKGROUND/PROPOSAL:

The purchase of Spray Patch Equipment for the Roads Department was approved by Council at the Council meeting on December 4, 2023 when the 2024 Budget was approved. The approved Capital Plan reflects a cost of $165,000 for the purchase of this equipment. The quote has come in at $175,691.00 which is over the budgeted amount by $10,691.00.

DISCUSSION/OPTIONS/BENEFITS/DISADVANTAGES:

Under Policy No. B-012-01 POL, Multi-Year Business Planning and Budgeting, the CAO has the authority to approve Capital adjustments that do not exceed $100,000.00 when prudent to do so, and must notify Council within a reasonable timeframe.

The purchase of the spray patch equipment was a Council initiative with the intent to provide a higher level of service to the community.

ALIGNMENT WITH STRATEGIC PLAN

This aligns with Council's strategic priorities of Pillar 4, Supportive Infrastructure and Pillar 5, Sustainable & Responsible Governance.

ADMINISTRATION RECOMMENDATIONS:

That Council support the CAO's approval of the budget adjustment in the amount of $10,691.00 for a total purchase price of $175,691.00, with the additional fund of $10,691.00 drawn from the Municipal New Restricted Surplus Account.

MOTION:

That the Town of Sundre Council support the CAO's approval of the budget adjustment in the amount of $10,691.00 for a total purchase price of $175,691.00, with the additional fund of $10,691.00 drawn from the Municipal New Restricted Surplus Account.

Date Reviewed: February 7, 2024 CAO: Linda Nelson

TOWN OF SUNDRE

REQUEST FOR DECISION

COUNCIL DATE	**February 12, 2024**
SUBJECT	**Town of Sundre Design Guidelines**
ORIGINATING DEPARTMENT	**Operations/Planning and Development**
AGENDA ITEM	**8.2**

BACKGROUND/PROPOSAL:

The Town of Sundre Design Guidelines have been compiled to provide the development industry with construction, inspections, and general requirements for development in Sundre. The document is a living document which allows for any future guideline revisions and to ensure best practices are adhered to.

DISCUSSION:

Verbal discussion and PowerPoint presentation

ALIGNMENT WITH STRATEGIC PLAN:

Aligns with Pillar 1 of Council's Strategic Plan, Community Development.

ADMINISTRATION RECOMMENDATIONS:

That Council accepts the presentation regarding the Town of Sundre Design Guidelines as information.

MOTION:

That the Town of Sundre Council accepts the presentation regarding the Town of Sundre Design Guidelines as information.

Date Reviewed: February 7, 2024 CAO: Linda Nelson

TOWN OF SUNDRE

Design Guidelines

January 2024

Contents

1. GENERAL

These standards are provided to set guidelines and establish requirements regarding design and construction of municipal infrastructure within the Town of Sundre (the Town). Its objective is to ensure that all municipal infrastructure work in Sundre is constructed to a consistent, sustainable standard. Construction of municipal infrastructure must adhere to these standards.

The Town retains the ability to refer to the current edition of the applicable City of Calgary Design Guidelines, Standards and Policies where the Town deems it appropriate on a case-by-case basis. These requirements apply to all individuals or priorities applying for a Development Permit within the Town of Sundre. The Town reserves the right to request additional information. All requirements of the Town of Sundre Development Authority must be met prior to commencement of any construction activities.

1.1 SUBMISSION

1.1.1 AREA STRUCTURE PLANS/OUTLINE PLANS

Area structure plans/outline plans for all Greenfield developments with more than one phase. The following reports as a minimum:

- Master Stormwater Drainage Plan
- Geotechnical Soils Investigation
- Traffic Impact Assessment
- Historical Impact Assessment
- Biophysical Impact Assessment
- Wetland Impact Assessment
- Environmental Site Assessment

Additional Submission that may be required include:

- Slope Stability Report - required when slopes exceed 15%
- Deep Fills Report - required on fills over 2.0 m or greater
- Traffic Noise Analysis and/or Sound Attenuation Report
- Any other submission and/or report that the Town of Sundre Development Authority deems required for the development.

1.2 SUBDIVISION DEVELOPMENT

All developers will be required to submit the following for every proposed phase of development:

- Engineering Drawing - The Town of Sundre requires engineering drawings to be submitted prior to construction for all proposed infrastructure to be constructed in support of the phase as well as any infrastructure in support of future phases or developments.

All drawings will be signed and sealed by a Professional Engineer/P.Tech (Eng) entitled to practice within the province of Alberta.

- Stormwater Management Report - The developer is required to submit the following reports in support of the phase.
- Staged Master Drainage Plan
- Storm Pond Report (if not already submitted)
- Geotechnical Report in support of the phase of development as required by the Town of Sundre Development Authority/Engineer
- Additional Reports and/or submissions that may be required:
- Slope Stability Analysis Report
- Deep Fills Report
- Traffic Noise Analysis and/or Sound Attenuation Report
- Traffic Impact Assessment

1.3 DEVELOPMENT SITE SERVICING PLAN

Development Site Servicing Plan, (DSSP), as per the City of Calgary Guidelines; the following reports will be required prior to Construction.

Stormwater Management:

- Sites smaller than 2 hectares require that the Rational method be used and the required calculation to be displayed in a tabular form on the D.S.S.P drawings. Please note that the City of Calgary annual rainwater data will be used for all storm calculations
- For sites larger than 2 hectares a Stormwater Management Report is required
- At the discretion of the Town of Sundre Development Authority/Engineer a

Stormwater Management Report may be required for sites less than 2 hectares

Erosion and Sediment Control:

- For sites smaller than 2 hectares an erosion and sediment control plan will be required
- For sites larger than 2 hectares an erosion and sediment control report will be required as part of the submission

Geotechnical Report:

- All sites require a submission of a Geotechnical Report unless otherwise directed by the Town of Sundre Development Authority/Engineer

Additional Reports and/or Submissions that may be required:

- Slope Stability Report - required when slopes exceed within the development area prior to or will exist when final grades have been met or for any other slope condition al the discretion of the Town of Sundre Development Authority/Engineer
- Deep Fills Report. required for all fills of 2.0m or greater within the development area
- Traffic Noise Analysis and/or Sound Attenuation Report
- Traffic Impact Assessment
- Any other report and/or submission that is deemed required by the Town of Sundre Development Authority/Engineer

1.4 SURVEY CONTROL MARKERS AND LEGAL PINS

1.4.1 EXISTING CONTROL

- The Developer or their Consultant shall make every effort to protect existing markers.
- Markers which are destroyed or disturbed shall be replaced by the Developer at their sole expense.

1.4.2 LEGAL POSTS

- Legel posts shall be placed subsequent to the installation of all utilities.
- All legal posts in the subdivision area shall be located within 60 days prior to application *for* Construction Completion of the surface improvements.

- The Developer shall instruct the legal surveying consultant to replace any missing or disturbed posts as required by the Town of Sundre Representative. All costs are to be borne by the Developer.

2. ROADS

The road design guidelines herein generally follow the most recent editions of Transportation Association of Canada (TAC) (Various Guidelines) and City of Calgary Design Guidelines. It is the Developer's responsibility to ensure that the design, construction and performance of all infrastructure constructed under the Development Agreement or Access and Work Agreement meets or exceeds these standards/guidelines. Good engineering practice and design is required for all road construction situations.

The Town may consider alternate road design variations from this section to accommodate unique site circumstances, provided that public safety and the Town are not at risk. Any and all variations are to be brought to the Town's attention and requested on a case by case basis.

The applicant shall enter into a "Development Agreement" with the Town to perform the road construction.

Applications must be submitted in writing with applicable design drawings to the Town for road construction and shall be subject to approval by the Town. For Provincial roads applications must also be submitted to the Ministry of Transportation and shall be subject to approval by the Ministry and the Town.

2.1 TRAFFIC IMPACT ANALYSIS

2.1.1 PURPOSE OF THE TRAFFIC IMPACT ASSESSMENT

The purpose of the Traffic Impact Assessment (TIA) is to review and evaluate operational conditions within the analyzed area and to assess impact of the proposed development and/or changes to the transportation network.

Study Area

The study area will be defined by the Town on a case by case basis and will include area adjacent to the proposed development. This may involve all the proposed access points as well as selected intersections within the study area designated by the Town of Sundre Representative. This includes intersections external as well as internal to the development.

Analyzed Horizons

The analysis should be carried out for:

- Current conditions using the current traffic volumes;
- Opening day - showing conditions at the opening day; and

- 5, 10, 15, and 25 year horizons or horizons as determined by the Town of Sundre Representative.

2.2 GENERAL

Individual street classification is to be based on functional use as shown in Table 1 and verified by Town.

The Developer and the Developer's Consultant are responsible to ensure that the infrastructure is designed and constructed to achieve design life expectations consistent with good design and construction practice

2.3 STREET CLASSIFICATION

Table 1 indicates the minimum required road cross sections for each street classification

Table 1 - Minimum Road Cross Sections

Classification	Description	Min. Granular Base Course Thickness (mm)	Min. Granular Sub-base Course Thickness (mm)	Min. Asphalt Pavement Thickness (mm)	Road width Lip of Gutter to Lip of Gutter (m)	ROW Width (m)
UL	Urban Lane	50	200	50 Mix B	6	7
UIC	Urban Industrial Commercial	100	300	110 Mix B 50 Mix A	9	19
UR	Urban Residential	100	200	45 Mix B 35 Mix A	9.0	16
URC	Urban Residential Collector	100	200	90 Mix B 50 Mix A	12.30	22.50
UPC	Urban Primary Collector	100	300	110 Mix B 50 Mix A	15.4	29

- Standard Road Sections Provided
- Final ROW shall be dependent upon the requirement for noise abatement.
- A sound attenuation study may be required for UPC and URC road classifications as directed by the Town.

2.4 VERTICAL ALIGNMENT

2.4.1 GRADE

- The minimum grade shall be 0.6% along all gutters, 1.0% around curb returns and 0.8% on lanes.
- The maximum grade shall be 8.0%.
- A maximum gradient of 2% for a distance of 30 m from the curb return for all roadways connecting to any intersection.
- All roads shall be crowned or shall have a crossfall of between 2 and 4%.

2.4.2 VERTICAL CURVES

- All vertical curve values shall be designed to meet the greater of TAC or City of Calgary guidelines/standards.

2.5 HORIZONTAL ALIGNMENT

2.5.1 CURVES

- The minimum degree of curvature of the centerline of the carriage way is dependent on the road classification and its design speed.
- All horizontal curves shall be designed to meet the greater value of TAC or City of Calgary guidelines/standards.

2.6 GENERAL REQUIREMENTS

2.6.1 PAVEMENT STRUCTURE

- The Geotechnical Report for the proposed project shall be submitted to the Town of Sundre Representative for review as part of the overall submission.
- The Geotechnical Report must include specific recommendations for pavement structure construction based on insitu conditions and projected traffic volume. The more conservative of the 20-year structure recommended by the Geotechnical Consultant and the structure shown in Table 1 shall be used.
- Table 1 indicates the minimum thicknesses of granular and asphaltic concrete

materials required for each street classification.

- The Final Acceptance Certificate (FAC) for roads excluding surface course asphalt shall be issued, subject to all deficiencies being rectified, two years after the issuance of the Construction Completion Certificate (CCC) for roads.
- If an interim or temporary entrance is necessary to provide access to a new subdivision, cul- de-sac or other residential street the pavement structure must be designed to accommodate the projected traffic and flooding/stormwater drainage for the life of the temporary access.

2.6.2 SIDEWALKSANDWALKWAYS

- Separate sidewalks shall be a minimum width of 1.5 m. Separate sidewalks shall be constructed where indicated on the standard road cross sections.
- Monolithic 1.5 m sidewalk and gutter with rolled curb shall be constructed where indicated on the standard road cross sections.
- Monolithic 1.5m sidewalk and gutter with standard curb shall be constructed where indicated on the standard road cross sections.
- All Collector and Arterial streets shall have sidewalks on both sides except where the adjacent lands are industrial where sidewalk is then only required on one side. Local roads shall have sidewalks on both sides where the adjacent lands are commercial or high density residential, otherwise local roads shall have sidewalk on one side.
- Wheelchair ramps are to be used at all curbed intersections and shall be constructed monolithically or securely dowelled and in accordance with City of Calgary Standards.
- All sidewalks shall be imprinted with the Contractor's stamp showing company name and year of construction. Frequency of stamps shall be one per residential block or every 200 m whichever is less.
- All sidewalks shall be imprinted with a "CC" to identify all Curb Cock locations.
- The design of the subdivision should consider pedestrian needs and allow for walkways through cul-de sacs and other appropriate locations.

2.6.3 CONCRETE CURB AND GUTTER

- Concrete curb and gutter shall be constructed on all streets in accordance with this

standard and City of Calgary standards.

- Standard curb and gutter shall be used on all collector (minor and major), arterial roads, and industrial roads. All roads fronting parks, PUL's, and walkways shall also require standard curb and gutter unless another means of preventing vehicular access onto these public lands is provided.
- Curb returns on residential street intersections shall be constructed with a minimum radius of 10.0m.
- Curb returns in industrial/commercial areas shall be constructed with a minimum radius of 15.0 m to accommodate truck turning movements.

2.6.4 DRIVEWAYS

- Residential subdivision lot layout shall be such that driveways shall not access directly onto arterial roadways. In addition, no driveways shall be permitted direct access onto those major collector roads or portions thereof which have an estimated traffic volume of 4,000 vpd or greater.
- No driveways or any portion thereof shall be permitted to access an abutting road through a curb return area.
- For corner lots the driveway zone must be indicated for the street of lesser traffic only.

2.6.5 BERMING, FENCING, AND LANDSCAPING

- Consistent noise attenuation fencing shall be required on all lots that back or side onto arterial roads. Berming and fencing shall be required to separate residential developments from high volume arterial traffic. Roadways through residential areas which require berming and adjacent fencing include all arterial roads as well as adjacent highways.
- Residential development adjacent to arterial roadways, may require a Traffic Noise Analysis (TNA) to be submitted during the development approval process. The Noise Impact Assessment (NIA) is to meet the intent of City of Calgary policy and standards.
- Fencing proposals are to be reviewed for acceptance by the Town.
- Fencing along arterial roads and utility lots shall be of a close boarded type and extend to ground level.

- Chain link fencing is required along parks, schools and other public open space and shall be 1.5 m high.
- All fences shall be constructed on private property.

2.6.6 CUL-DE-SACS

- The normal maximum length of a cul-de-sac is 120 m from the street curb line to the start of the bulb. Cul-de-sacs in excess of 120 m and less than 170 m will require an additional hydrant. Water main looping will be required for cul-de-sacs in excess of 120m. Where cul-de- sacs in excess of 170 m are proposed, provision must be made for a 6.0 m wide PUL for emergency vehicle access and water service looping.
- Cul-de-sacs with grades are to be avoided. If cul-de-sacs cannot be graded to drain towards the intersection, then an outlet for the overland flow must be provided by way of a PUL.
- The minimum radius of cul-de-sac bulbs is 10.5m to lip of gutter for residential and 14.75m for all others.
- Cul-de-sac road surface is to be crowned except the bulb portion which may be crossfall.

2.6.7 INTERSECTIONS

- Intersections include the crossing of two public roadways or the connection of a public access to a roadway.
- The minimum angle of intersection for two roadways shall be 75°.
- Intersection design is to meet the more stringent of TAC, or City of Calgary guidelines/standards.
- Acceptance of intersection design, driveway locations and fencing shall be subject to review of available sight distances and other safety considerations. Tapering of berms at intersections may be required to provide for the necessary sight distances. Acceptance shall be granted on a case by case basis.
- The Developer shall provide confirmation that sight distances, and horizontal and vertical visibility constraints at the access to arterial roadways, Range Roads and Township Roads meet the applicable stopping sight distances.
- Minimum centerline to centerline spacing of intersections shall be 60 m, or in accordance with City of Calgary design guideline along local and collector roadways.

Under normal circumstances (i.e., on the 1.6 km or 3.2 km sections of grid roads) access to arterial roads may be permitted as follows:

- Signalized where warranted provided that the signalized intersections are spaced and designed to minimize arterial impact.
- Round-a-bouts will be considered by the Town as an alternative to signalized intersections.

Where traffic volumes or existing conditions make the above standards inappropriate the more stringent of TAC or City of Calgary guidelines/standards are to be applied.

- At the intersection of arterial roads and where the traffic volume at entrance roads indicates a need for acceleration/deceleration turning lanes the Developer shall provide an additional 3.7 m for widening of the arterial ROW.
- Standard 6m x 6m comer cutoffs will be required at all intersections unless otherwise directed by the Town.

2.6.8 LANEWAYS

- All laneways shall be a minimum of 6.0 m in width.
- If paved, laneways shall be paved over their full width.
- An inverted cross-section shall be used for laneway construction with a minimum longitudinal grade of 0.8%.

2.6.9 TRAFFIC CONTROL AND STREET NAME SIGNS

- Traffic control and street name signs are to be as per City of Calgary standards unless otherwise stated in this section.
- Street name signs at intersections shall consist of white lettering on a green metal plate. Lettering sizes shall be as follows:
- Arterial Roadways: 250 mm (10") on a 300 mm (12") blade.
- Major Collector Roadways: 250 mm (1O") on a 300 mm (12") blade.
- Minor Collector and Local Roadways: 100 mm (4") on a 150 mm (6") blade.
- 100 mm (4") white address numbering on a green metal plate will be required on all cul-de-sacs in addition to the street name signage. For example:
  - 400-408 Aspen Cres NW

- 400 Block Aspen Cres NW

- Developers may be permitted to install additional decorative street name signage or signage support when adequate maintenance funding provisions have been approved by the Town of Sundre Representative.

2.7 ROADWAY LIGHTING

2.7.1 CRITERIA

- The illumination of roadways in urban areas shall be designed to the TAC Guide for the Design of Roadway Lighting.

3. SANITARY SEWER SYSTEM

3.1 SYSTEM DESIGN

3.1.1 GENERAL

The sanitary sewer system shall be of sufficient capacity to carry peak flows plus an inflow and infiltration allowance. The flows and factors outlined in the following sections shall be used in the design of sanitary sewer systems.

The Developer and the Developer's Consultant are responsible to meet the requirements of Alberta Environment & Parks when connecting to existing municipal systems or utilities.

The Developer and the Developer's Consultant are responsible to ensure that the infrastructure is designed and constructed to achieve design life expectations consistent with good design and construction practice.

3.1.2 ESTIMATING AVERAGE SEWAGE FLOWS

- Residential: 350 L/person/day.
- Commercial/Industrial: Since these flows vary greatly with the type of development, each case must be considered on an individual basis. For preliminary planning purposes, 24.0 person/ha may be used for Commercial/Light Industrial.
- In determining residential flows a minimum of 27 persons per hectare shall be used.

3.1.3 PEAKING FACTOR

- The peaking factor for residential development shall be calculated using the Harmon Formula. The minimum peaking factor shall be 4.0.

$$Peaking\ Factor = 1 + \frac{14}{4 + \left(\frac{P}{1000}\right)0.5}$$

- Where P = the design contributing population in thousands.
- The peaking factor must reflect the projected population of the subdivision being designed.
- The peaking factor for commercial/industrial development varies greatly with the type of development. Each case must be considered on an individual basis.

3.1.4 ESTIMATING EXTRANEOUS FLOW ALLOWANCES

- A general infiltration allowance of 0.28 L/sec/ha shall be added to the above flow.
- In addition, a separate allowance of 0.4 L/sec shall be added for each manhole located in a street sag with some degree of water inflow control in place.

3.1.5 PIPE SIZING

Minimum Pipe Size:

- Commercial/ Industrial/ Institutional: 250 mm
- Residential: 200 mm (150mm may be permitted on request for sewers servicing 6 or less units)

Pipe sizing shall be determined by utilizing the Manning's formula using a minimum "n" valve (roughness coefficient) of 0.013.

$$Q = \frac{AR^{2/3}S^{1/2}}{n}$$

With calculation of the estimated design flow from the Manning's formula the pipe capacity shall then be determined with the following formula

$$Required\ Sewer\ Capacity = \frac{Estimated\ Design\ Flow}{.86}$$

Minimum Flow Velocity

0.60 m/sec. Maximum flow velocity= 3.0 m/sec. Minimum flow velocity in first upstream leg to be 0.90 m/sec.

3.1.6 WEEPING TILES (FOUNDATION DRAINS)

- For any development (residential, commercial, industrial, etc.}, weeping tiles, roof leaders (downspouts), sump pumps and similar appurtenances that handle storm water or ground water are not permitted to discharge into sanitary sewers.

3.1.7 SANITARY SEWER MAIN ALIGNMENTS AND LOCATIONS

- Standard road sections provide line assignments for mains.
- Connection manholes and service mains to property line are required for a multi-family site as part of the overall subdivision site servicing. The Developer's Consultant must address the size and depth requirements of the service stub to ensure all of the multi-family lot can be adequately serviced.

- Mains shall be at a depth adequate to provide a minimum 2.5 m cover for silt and clay soils and 2.8m cover for granular soils from finished grade to top of pipe and the required minimum depth of cover over service connections. Insulation will be required for any main that is installed with less than the minimum cover.
- Curved sewers shall be permitted with the following restrictions:
- The curve shall run parallel to the curb or street centerline
- The minimum grade for sewers on a curve shall be 50% greater than the minimum grade required for a straight run of sewer
- Manholes shall be located at the beginning and end of each curve. Joint deflection shall not exceed pipe manufacturers' specifications
- At water main crossings of sanitary and storm sewers, the following shall apply:
- Under normal conditions, water mains shall cross above sewers with a sufficient vertical separation to allow for proper bedding and structural support of the water and sewer mains.
- Where it is necessary for the water main to cross below the sewer, the water main shall be installed by providing
    - A vertical separation of at least 0.5 m from water main crown to sewer invert;
    - Structural support of the sewer to prevent excessive joint deflection and settling; and
    - A cantering of the length of water main at the point of crossing so that the joints are equidistant from the sewer.

3.1.8 MANHOLES

- The maximum spacing between manholes shall be 185 m. Lesser spacing distance is encouraged for maintenance purposes.
- Manhole bases shall be a 2m high jointless section with link seal inserts, bolt facing into the manhole to allow for maintenance.
- All wastewater manholes shall be wrapped with riser wrap in accordance with manufactures specifications.
- Manholes are also required at all transitions in size, grade, or direction, and at junctions and the ends of mains. Change in flow direction shall not exceed 90

degrees. Manholes should be located to avoid driveway conflicts.

- At manholes where pipe size changes occur, the crowns (obverts) of the incoming mains shall be designed to match or be higher than the outgoing main. This requirement could be relaxed if a hydraulic flow analysis proves flows are not negatively impacted.
- Inverts in manholes shall have a minimum 30 mm drop for straight run sewer manholes. At changes in direction, manholes shall have at least 60 mm fall across the manhole in the direction of flow from inlet to outlet elevation and 150mm for bends greater than 90º if permitted by the Town of Sundre Representative. The intention is to maintain the HGL considering entrance and exit losses such that the above minimums shall be increased as necessary.
- Drop sections are required for invert grade differences greater than 300 mm in sanitary sewer manholes. For 200 mm and 250 mm mains, internal drops may be used. Benching is required for invert grade differences 300 mm or less.

3.1.9 SERVICE CONNECTIONS

- Each lot, multi-family unit, and condo unit shall have their own separate sanitary service connection.
- The minimum size of a sanitary sewer service connection shall be 100 mm inside diameter.
- Non-residential and multi-family service connections shall be sized according to anticipated user requirements. These service connections would normally be installed at the time that the subdivision is developed. Commercial/Industrial service connections may be deferred until the lots develop provided there will be no disturbance to the roadway while making the connection to the sewer main.
- The minimum grade on the service line shall be 2.0%.
- In the case of single-family lots, the minimum depth of cover shall be 2.6 m to the top of pipe from finished grade at a point 0.15 m from the back (house side) of the property easement/right-of-way.
- For non-residential and multi-family service connections, the Developer's Consultant must address the depth requirements for servicing of these lots in the establishment of the design depth for the sanitary sewer main on the abutting street.

- Services shall be located such that they do not conflict with driveway locations.
- In-line Tees or Wyes are required for all residential service connections, saddles are not permitted.
- Commercial/industrial connections 200 mm or larger require a manhole connection. Where a manhole connection is provided an inspection chamber is not required.

4. WATER DISTRIBUTION SYSTEM

4.1 GENERAL

The Developer and the Developer's Consultant are responsible to meet the requirements of Alberta Environment & Parks when connecting to existing municipal systems or utilities.

The Developer and the Developer's Consultant are responsible to ensure that the infrastructure is designed and constructed to achieve design life expectations consistent with good design and construction practice.

4.2 SYSTEM DESIGN

4.2.1 HYDRAULIC NETWORK ANALYSIS

- The Developer shall perform hydraulic network analyses for all developments.
- The criteria for network analysis shall be as follows:
- The normal operating range for residential pressure shall be between 350 kPa to 570kPa with a maximum velocity of 3.0 m/sec.
- Design population shall be the ultimate population for the area under construction.
- Design consumption:
    - Average Day Minimum Demand 360 L/person/day
    - Maximum Day Demand 720 L/person/day
    - Peak Hour Demand 1,440 L/person/day
- The maximum value of "C" in the Hazen- Williams formula shall be 120 regardless of pipe material.
- An analysis shall be made for peak hour demand and the mains shall be sized such that there shall be a minimum residual pressure of 350 kPa at ground level at any node in the network.
- Analysis to be performed on system for maximum day demand plus a fire flow of:
    - 50 L/s fire flow for Country Residential
    - 75 L/s fire flow for Single Family Residential
    - 120 L/s fire flow for Multi-Family and High Density
    - 120 L/s for Downtown and Highway Commercial
    - 150 L/s fire flow for Industrial

The minimum residual pressure at any node in the system shall be 140 kPa at ground level under this situation.

- Fire flow conditions shall also be analyzed using the criteria contained in the most recent edition of 'Water Supply For Public Fire Protection, A Guide to Recommended Practice" as published by Fire Underwriters Survey. The analysis must take into consideration the various factors which may impact on the fire flow requirements.
- In commercial/industrial areas, a separate analysis shall also be made to determine what system configurations and sizes would be required to provide direct flow to sprinkler systems in combination with hydrant flows in accordance with National Fire Protection and Fire Underwriter's Survey standards.
- All calculations, schematic diagrams, computer printouts, etc. shall be submitted.

4.2.2 WATER MAINS

In residential, commercial, and industrial subdivisions the water main alignments and hydrant locations shall be as per the standard road cross sections.

The installation of a water main service to property line for a multi-family site development would normally be completed at the time of initial subdivision development.

The water distribution system in new subdivisions shall be looped. For the initial purely residential stages of a large development area the Town of Sundre Representative, at its sole discretion, may temporarily waive this requirement provided that the developer can demonstrate that the necessary fire flows can be delivered via the single water feed. In any event, a maximum of 100 lots may be serviced temporarily without looping of the system. Looping must be provided within one year of temporarily servicing without looping.

In the case of residential cul-de-sacs, distribution lines must all be looped except those serving single cul-de-sacs of less than 120 mas measured from the street curb line to the start of the bulb. In the case of industrial/commercial subdivisions, all distribution mains must be looped.

At street intersections, a minimum clearance of 1.5 m horizontally shall be maintained between water mains and any catch basins or storm manholes.

Mains shall be at a depth adequate to provide a minimum 3.0 m cover in silt and clay soils and 3.3 m cover in granular soils from finished grade to top of pipe and the same

depth of cover over service line goosenecks (in the case of single-family dwelling services).

The minimum diameter for distribution mains shall be 200 mm for a residential development. For commercial/industrial development, the minimum water main size shall be 250 mm.

At water main crossings of sanitary and storm sewers, the following shall apply:

- Under normal conditions, water mains shall cross above sewers with a sufficient vertical separation to allow for proper bedding and structural support of waler and sewer mains.
- Where it is necessary for the water main to cross below the sewer, the water mail\ shall be protected by providing:
    - A vertical separation of at least 0.5 m from water main crown to sewer invert:
    - Structural support of the sewer to prevent excessive joint deflection and settling; or
    - A centering of the length of water main at the point of crossing so that the joints are equidistant from the sewer.

In the vicinity where a change in elevation greater than two pipe diameters between the obvert of the lower pipe and the invert of the upper pipe where no service line exists. a blow-off or similar device must be added for the removal of trapped air.

Any water main installed made of PVC, HDPE or similar non-conductive material is to have tracer wire installed where outside of road rights of way or laneways. The tracer wire shall have connection points exposed al every opportunity (all valves. Blowoffs and hydrants).

Tracer wire shall be a minimum of 14-gauge coated copper wire complete and sacrificial 5 lb anodes on valves and hydrants.

4.2.3 HYDRANTS

- Maximum allowable spacing between fire hydrants shall be 150 m in single family residential areas and 90 m in multiple family residential. school or industrial commercial areas. Variances may be considered if it can be demonstrated that the alternative hydrant location provides more efficient connection and response lime. Town of Sundre Fire and Emergency Management Services should be included for input into any variance request.

- Hydrants shall be located at the beginning of the curve of the curb return at the corners of intersections or at the extension of property lines.
- In cul-de-sacs of 75 m in length or less. the hyd1ant shall be installed at or near the intersection of the intersecting street.
- Hydrants are to be set to ensure that the pumper port faces the street. If non-standard alignment locations are accepted for either the main or the hydrant, the hydrant valve must not be installed directly in front of the pumper port.
- Hydrant shall be compression type as manufactured by Clow Brigadier M67 or a McAvity M67B. Hydrants shall be painted lime green with black caps and top in colour. All hydrants will have 2.5" thread side ports, "5" Storz pumper port and square operating nut.

4.2.4 VALVES

- Distribution main valves shall be located as follows:
  - On the projection of property lines at mid-block, at the beginning of curb return at road intersections.
- Distribution main valves shall be located such that in the event of a shutdown:
  - No more than two hydrants are taken out of service,
  - No more than 25 single family units are involved in a shutdown.
- Maximum length of a dead-end line in a residential neighbourhood is 120 m. A flushing hydrant or assembly must be installed at the end of dead-end line. Flushing assemblies need to be sized to achieve a minimum flushing flow of 0.6 m/sec.
- Valves on hydrant leads are to be located in the boulevard area. All hydrants must be separated from the distribution system by a valve. Valves shall be spaced far enough away from the hydrant body to allow for easy operation.
- Valves shall be the same size as the main they are installed on and be manufactured by Mueller or Clow.

4.2.5 SERVICE CONNECTIONS

- Each lot, multi-family unit, and condo unit shall have its own separate water service connection. Any sprinkler dwellings are to have a minimum 38mm service and be sized as per the demands.

- Services to single family dwellings or multi-family units shall be a minimum 25 mm diameter and shall be series PEX Pipe (cross-linked polyethylene pipe).
- Multi-family and industrial/commercial service connections shall be sized according to anticipated user requirements. These service connections would normally be installed at the time that the subdivision is being developed. Commercial/Industrial service connections may be deferred until the individual lots develop provided there will not be a disturbance to the roadway while making the connection to the water main. A shut-off valve must be installed offset to roadside, 0.3 m property line when the lot is serviced.
- In the case of single-family lots, the minimum depth of cover shall be:
  - 3.0 m for silt and clay soils and
  - 3.3 m for granular soils from finished grade over a vertical gooseneck and to the top of pipe at a point
- 0.15 m from the back of (house side) of the easement required along the front of all lots.
- Curb stops locations shall be located such that they do not conflict with driveway locations or sidewalks and be 0.30m from property line.
- Parks green spaces and landscaped areas may require a water service. The size, type and requirement will be determined in consultation with the Town.
- Water meters 50mm (2") or greater are at the cost of the developer (including the Automatic Meter Read (AMR))

5. STORMWATER MANAGEMENT SYSTEM

5.1 SYSTEM DESIGN

5.1.1 GENERAL

The concept of a major and minor storm drainage system has three purposes:

- The control of storm water to minimize inconvenience or disruption of activity as a result of runoff from more frequent but less intense storms, and
- Control of storm water runoff to prevent or minimize damage to property, physical injury and loss of life which may occur during or after an infrequent or unusual storm; and
- Provide improved water quality by filtering contaminants prior to entering receiving downstream water courses.

When the minor system capacity is exceeded, the major system must provide a continuous overland flow route for runoff water to follow. Generally major system routing shall utilize roadways and open channels with carefully designed and controlled lot grading and building elevations.

Storm sewers shall be designed as a separate sewer system. Effluent from sanitary sewers or any potentially contaminated drainage from industrial, agricultural, or commercial operations shall not be discharged to storm sewers.

The Developer and their Engineering Consultant must adhere to the guidelines presented in the latest edition of the publication "Stormwater Management Guidelines for the Province of Alberta" prepared by AEP.

5.1.2 MINOR SYSTEM

Design Criteria

- The Minor System must be designed to accommodate the runoff generated by a 1:5 year storm event.
- The Rational Method. For most developments, the Rational Method is not an acceptable form of stormwater analysis in the Town of Sundre. However, in some cases for single lot developments less than 2.0 ha exceptions may be provided. Such exceptions will require written approval obtained from the Town of Sundre Representative. All other cases will require the use of computer modeling.
- Computer modelling shall be required by the Town for the design of stormwater systems for all areas not specifically approved in the previous section.

- Minimum Pipe Size:
  - Storm Sewer 300 mm
  - Catch Basin Lead 250mm
  - Double Catch Basin Lead 300 mm
- Pipe sizing shall be determined by utilizing the Manning's Formula using a minimum "n" value of 0.013.
- Minimum flow velocity = 0.60 m/sec. Maximum flow velocity = 3.0 m/sec.
- The minimum grade of catch basin leads shall not be less than 1.0%.
- Minimum slopes determined by velocity shall be increased by 50% on all curves.

Storm Sewer Main Alignments and Locations

- Alignments are provided in the standard road cross sections.
- The installation of a main into a multi-family site development would normally be completed at the time the site develops. However, the Developer's Consultant must address the depth requirements for servicing the site in the establishment of the design depth for the main located on the abutting street.
- Storm sewer service must be provided to all commercial and industrial lots.
- Storm sewers must be located at least 2.5 m horizontally from any water main.
- PUL widths shall be a minimum of 6.0 m for a single utility and 9.0 m for one containing two utilities. A 1.0 m easement is required on the lots on each side of a PUL.
- Mains shall have a minimum depth of cover of 1.2 m to top of pipe.
- Curved sewers shall be permitted in accordance with manufacturers specifications with the following restrictions:
  - The curve shall run parallel to the curb or street centreline.
  - The minimum grade for sewers on a curve shall be 50% greater than the minimum grade required for a straight run of sewer.
  - Manholes shall be located at the beginning and end of each curve and intermediate locations as required.
- At water main crossings of sanitary and storm sewers, the following shall apply:

- Under normal conditions, water mains shall cross above sewers with a sufficient vertical separation to allow for proper bedding and structural support of the water and sewer mains.

- Where it is necessary for the water main to cross below the sewer, the water main shall be protected by providing:
  - A vertical separation of at least 0.5 m from water main crown to sewer invert;
  - Structural support of the sewer to prevent excessive joint deflection and settling; or
  - A cantering of the length of water main at the point of crossing so that the joints are equidistant from the sewer

Manholes

- The maximum spacing between manholes shall be 185 m.
- Manholes are also required at all transitions in size, grade, or direction, and at junctions and the ends of mains. They should be located to avoid driveway conflicts.
- At manholes where size changes occur, the crowns (obverts) *of* the mains shall be designed to match.
- Inverts in manholes shall have a minimum 30 mm drop for straight run sewer manholes. At changes in direction, manholes shall have at least 60 mm fall across the manhole in the direction of flow from inlet to outlet elevation and 150mm for bends greater than 90o. The intention is to maintain the HGL considering entrance and exit losses such that the above minimums shall be increased as necessary.

Catch Basins

- See City of Calgary Stormwater Management and Design Manual for catch basin types.
- The maximum run between catch basins shall be 150 m with minimum grades.
- Spacing and capacity of catch basins shall be such that ponding shall not occur during a 1:5 year storm.
- Catch basins shall be installed to intercept all overland flows, including back lanes, prior to crossing walkways. At curb returns, catch basins shall be installed

to intercept runoff on the uphill side of cross walks.

- Concrete swales crossing roadways will be permitted with written approval of the Town. Concrete swale shall be a minimum of 1.0m in width.

Catch Basin Leads

- The minimum size of catch basin leads shall be 250 mm inside diameter.
- The maximum length of a catch basin lead shall be 30 m. A catch basin manhole shall be required at the upper end if the lead exceeds 30 m.
- The minimum grade on a catch basin lead shall be 1.0%.
- Minimum depth of cover shall be 1.2 m to top of pipe.
- All leads shall be connected to a main line manhole or a catch basin manhole.

Storm Sewer Service Connections

- Single family Residential Service connections shall be minimum 75 mm inside diameter.
- Medium/high density residential and non-residential site service connections shall be sized according to anticipated site requirements.
- Services shall be located such that they do not conflict with driveway locations.

5.2 MAJOR SYSTEM & STORM WATER MANAGEMENT FACILITIES (SWMF)

5.2.1 GENERAL

- The overall major drainage system for the Urban Services Area must be designed to provide continuous overland flow routes with minimum depths of ponding in roadway sags and to provide overflow routes at all SWMF. The development of the major drainage system framework shall be a key component of the Master Drainage Plan to be developed by the Developer's Engineering Consultant for new drainage basins (watersheds).
- The major system shall accommodate a 1:100 year storm.

5.2.2 LOT GRADING

- Carefully designed and controlled lot grading is an important component of the Major System
- Lots shall be designed to drain so that the adjacent landowners are not adversely affected.

- Minimum and maximum slopes on landscaped areas to be 2% and 10% respectively. An initial minimum grade of 10% over a distance of 1.5 m is to be provided around all buildings. Driveway slopes must be no less than 2% and no greater than 8%.
- Down spouts shall be directed to landscape areas
- Sump pump out flow is to be directed to landscape areas. Sumps are not to be connected to the wastewater system nor to the storm system directly. Connection to the storm system shall be via the storrn service.

5.2.3 STORM WATER MANAGEMENT FACILITIES

- Stormwater Management Facilities shall be as per AEP "Stormwater Management Guidelines for the Province of Alberta.
- Oil Grit Separators may be required by the Ton on a case-by-case basis.

6. NATURAL GAS

6.1 GENERAL

The Town of Sundre is a member of the Federation of Alberta Gas Co-op Ltd. As such, the Town owns and operates the natural gas distribution system. The system consists of a series of polyethylene distribution pipe operating at a pressure of 35 psi and high-pressure mains of schedule 80 yellow jacket operating at 80 psi or greater.

6.2 DESIGN

All gas load sizing requirements are to be submitted to the Town's Planning Department.

6.3 CONSTRUCTION

All natural gas mains, services, related equipment, and design costs are the responsibility of the developer. The Town of Sundre Gas Department will be responsible for the installation of the infrastructure

Reference: Town of Sundre Natural Gas Municipal Servicing Guidelines | Appendix "D"

Appendix A

Development Site Servicing Plan (DSSP) Report

Subdivision Stormwater Management (SWMR) Report

Design Guidelines

Checklist for:

- Development Site Servicing Plan (DSSP) Report
- Subdivision Stormwater Management (SWMR) Report

Project: _____

Developer: _____

Yes	No	N/A		
☐	☐	☐	1.	Checklist items marked as "NO" or "NIA" are explained in the comment section.
☐	☐	☐	2.	Submit two copies of report that are signed and include the Professional Engineer's stamp and the company's permit number.
☐	☐	☐	3.	Cover letter highlights any unresolved issues or areas where guidelines cannot be met.
☐	☐	☐	4.	Include Development Permit Number on cover page of report.
☐	☐	☐	5.	Include plastic sleeve behind title page for future correspondence.
☐	☐	☐	6.	State design objectives
☐	☐	☐	7.	Identify Master and/or Staged Master Drainage Plans appropriate to submission.
☐	☐	☐	8.	Explicitly state that all details conform to the City of Calgary Standard Specifications and Stormwater Management Design Manual, or explicitly state items that have to be addressed prior to report approval.
☐	☐	☐	9.	Study Area and Location sketches include overall site description and show location, section number and major roadways. It is best to include two figures: one showing the location of the area with respect to Town of Strathmore, and the other showing the report phase and surrounding report phases including those not in control of the developer.
☐	☐	☐	10.	Site description includes legal land location and area in hectares.
☐	☐	☐	11.	Explicitly state all overhead flows crossing boundary limits and their location with references to related
☐	☐	☐	12.	Boundaries match those of existing reports, or supplemental information is included to rationalize the changes
☐	☐	☐	13.	Identify all stormwater quality and quantity treatment facilities or other BMPs.
☐	☐	☐	14.	Any increase in flow offsite has been reviewed for the impact on affected downstream works.

☐ ☐ ☐ 15. Include brief description of computer model, methodology, design storm parameters, and computer input parameters

☐ ☐ ☐ 16. Include schematic that matches the submitted drawings and computer model.

☐ ☐ ☐ 17. Attach computer model input and output files.

☐ ☐ ☐ 18. Include figure/table delineating subcatchments and sizes of the subcatchments within the subdivision phase

☐ ☐ ☐ 19. Summary table of minor system flows for the 1 in 100-year event or other approved storm trunk design method to ensure pipe design flows are not exceeded. The summary should include capacity design flow based on release rate, and cumulative 1 in 100-year event flows based on the model's output. Source of permissible release rate Is also provided.

☐ ☐ ☐ 20. Trap low storage table shows all trap lows in the phase and those on the boundary. The table must include required 1 in 100 year volumes. depths and elevations. and design (also called maximum or spill) volumes, depths and elevations Minimum building opening elevations (MG's} and restrictive covenants (RMG's) should be included (as required).

☐ ☐ ☐ 21. Overland flows. velocities and depths for all critical segments within phase boundaries are shown. Trap low spill information is clearly labeled. Alberta Environment depth-velocity guidelines have been addressed.

☐ ☐ ☐ 22. Surcharge (HGL) analysis is included on a site-specific basis for areas impacted by the HWL from stormwater ponds or other conditions.

☐ ☐ ☐ 23. All plans submitted include quarter section lines and street names. Pertinent information on the plans uses legible font sizes.

☐ ☐ ☐ 24. Submit digital copy of Overland Drainage boundary drawing in .dxf format.

☐ ☐ ☐ 25. Full size Overland Drainage drawing (identical to drawing in construction set), including:

- Professional Engineer's stamp which has been signed and dated
- Subdivision phase and construction boundary
- Q, v, ds for critical segments
- Trap low storage table
- Trap low location and outline at spill elevation
- ICD's, catch basin types, and interconnected CBs
- Details/cross-sections for spills as required
- Overland escape routes (arrow) must be clearly delineated
- Concrete drainage gutter locations and details for deep or non-standard gutter sections
- Direction of drainage flow (arrow} including slopes, high points and low points
- Catchment I.D.s
- Original ground contour lines.

☐ ☐ ☐ 26. Full size Storm Drainage drawing (identical to drawing in construction set, including:

- Professional Engineer's stamp which has been signed and dated
- Drainage area boundary lines
- Drainage area sizes and release rates
- Minor system table that follows logical flow pattern
- ICDs catch basin types and interconnected CBs
- Pipe layout including pipe sizes and manhole numbers
- Overall drainage plans if applicable
- Pipe numbering system if applicable.

Checklist for:

- Development Site Servicing Plan (DSSP) Report
- Subdivision Stormwater Management Report

Comments:

I, the undersigned, have reviewed the Stormwater Reports Checklist.

Signature of Report Author	Name (Please Print)	Date

Appendix B

Mechanical Site Plan Requirements

MECHANICAL SITE PLAN REQUIREMENTS

A. GENERAL

Mechanical Site Plans are to be submitted to the Town. The Town will forward the plans for review to their consulting engineer for comment. The Town will then comply with the comments and approve or reject the application.

All Mechanical Site Plans shall include the following information. In addition, the Town may at its discretion, request any additional data which may be necessary to check the proposed work. The amount of information required will depend on the complexity of the project and the area topography. All plans should be legible and drawn to a suitable scale to qualify for circulation.

ALL PLANS SHALL BE THOROUGHLY CHECKED BY THE CONSULTANT PRIOR TO SUBMISSION TO THE TOWN.

B. SPECIFIC MECHANICAL SITE PLAN REQUIREMENTS

1. Name and type of development.
2. Complete legal description and municipal address.
3. Name of consultant (Engineer or Architect) and a signed professional stamp.
4. North arrow pointing to the top or left hand side of the drawing.
5. Scale of plan: metric (as required by conversion to SL)
6. Full dimensional information - property line lengths, building locations, utility connection locations at point of crossing property line, etc.
7. Location and dimensions of all parking areas, large grassed or gravelled areas, and future development where applicable.
8. Abutting streets, avenues, lanes, sidewalks and curbs, both existing and proposed shown and labelled.
9. Bylawed road widening setbacks and corner cuts, dimensioned and labelled.
10. All utility and access rights-of-way both public and private, dimensioned and labelled as to purpose of right-of-way.
11. Location of all existing and proposed shallow and deep utilities (mains and services), both public and private, dimensioned and labelled.
12. Location of hydrants; power, light and signed poles; electric and telephone transmission boxes; retaining walls, catch basins and manholes; and other physical features both existing and proposed on the site, and adjoining streets and

rights-of-way shown and labelled.

13. Trees, landscaping, fences, berms, swales, slopes and other physical features which could affect utility servicing both on the site and adjoining boulevards.
14. Major grade changes and ramps.
15. Ground floor elevations and property line corner elevations. All elevations shall be given in Metres (Geodetic)
16. All utilities must be referenced to buildings, property lines and other utilities. The use of the term "minimum" following dimensions does not give an accurate location of utilities and it will not be accepted.
17. The following data is required for the sewer lines:
    i. Pipe size and specification - type, class, etc.
    ii. Pipe bedding
    iii. Pipe gradient
    iv. Pipe lengths between manholes and catch basins
    v. Pipe inverts at manholes and catch basins
    vi. Pipe capacity for large developments
    vii. Location of sanitary test manhole if applicable, (invert drop through M.H.)
18. The following data is required to check the serviceability of surface drainage and the depth of sewers:
    i. Surface grades
    ii. Manhole and catch basin rim elevations
    iii. Drainage pattern indicated by boundary lines and arrows
    iv. Any structures to be built over utilities shall be indicated (no trees, shrubs, permanent construction or unauthorized change of grade permitted in easements or ROWs).
19. The following data is required for the water services:
    i. Pipe sizes & type of pipe
    ii. Location of water meter to be located on site plan (indicated by M)
    iii. The total water flow rate required to service development for domestic use and fire protection:
        a. Domestic use
        b. Fire flow protection
        c. Sprinkler
        d. On site hydrants
        e. Total flow rate

f. Provide the total fixture unit count.

iv. Water services to be fully dimensioned to property lines, building, and other utilities.

v. Locations of all mains, branches, valves and hydrants shall be shown and dimensioned to property lines and buildings.

20. A mechanical plan must be included with the forementioned mechanical site plan showing the following information, providing this information is not shown on the mechanical site plan;
    i. Water meter location and accessibility.
    ii. Complete water meter details in accordance to Town of Strathmore Specifications
    iii. Complete details of internal piping in the water meter location c/w pressure reducing devices, back flow prevention devices and valving.
    iv. All meters which are used exclusively for irrigation water shall be indicated.
21. All revisions on drawings for resubmission shall be fully noted on the drawings and in the "Revisions" column in the title block.

C. GENERAL

All catch basins, manholes, hydrants, valves and water meters must be to Town of Sundre standards and all elevations should be Geodetic datum. All buildings, utilities, valves, poles, etc. should be located on plan by dimensional reference to property lines.

Show any existing or proposed driveways.

Plans should distinguish clearly the boundary between proposed and any existing development. If the proposal is an extension of existing development, then the utilities serving the existing development should be shown on the plan.

Any proposed sewer and water connections on public property (including public easements and public utility right-of-ways) will be installed by the Town at the developer's expense. NOTE: The Town will not install service connections across shallow utility easements.

Additional data may be required depending on the complexity of the project.

The provision of such site plan does not replace any building detail plans or sections which must be included as part of the mechanical plans submission.

Two site servicing plans must be submitted in addition to the two sets of complete mechanical plans.

2 sets Solid Waste Services drawings (showing location and details) must be submitted at the same time.

Appendix C Drawings

Reference City of Calgary Design Guidelines

APPENDIX "D"

Town of Sundre

Natural Gas Municipal Servicing Guidelines

Revision 0

Prepared for:
Jim Hall, Gas Manager
Town of Sundre
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T0M 1X0

Prepared by:
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December 22, 2023

Table of Contents

1. Introduction

1.1. Background, Goals, and Objectives

The Town of Sundre (The Town) owns and operates a natural gas distribution utility and is a member of the Federation of Alberta Natural Gas Co-op Ltd. In 2023 The Town retained Hames Engineering to create a guide for natural gas servicing in The Town. The gas distribution system is designed in accordance with applicable legislation, codes, and standards from Canadian Standards Association (CSA Z662) and Alberta Government's Rural Utilities Section's Technical Standards manual (TSM).

The Town requires certain information and conditions from developers and/or their engineering consultants to provide safe, efficient, cost-effective, high-quality natural gas service to town developments.

This publication is designed to ensure that all parties know their responsibilities in each situation. Developers, their engineering consultants, and field superintendents should familiarize themselves with this information to avoid delays in obtaining service.

Section *2. Requirements* outlines planning and installation aspects common to any type of development.

Information specific to various types of developments is categorized under their respective sections (see *Table of Contents*).

2. Requirements

2.1. Engineering and Design

At the subdivision stage, it is the developer's responsibility to provide drawings consisting of gas main line assignments including:

- Final elevations.
- Utility right of way locations.
- Road crossings.
- Conduit size.
- Design.

These drawings are to be provided prior to construction for approval by The Town's engineering consultant, Hames Engineering.

Furthermore, Hames Engineering requires the following materials and information from the developer for applicable review by planning and gas engineering:

- Tentative legal plan.
- Tentative cover sheets for the development including sidewalk, storm, sanitary and water.
- Tentative construction schedule.
- Digital copy of the computer base plan in MicroStation (*.DGN) format or in AutoCAD (*.DWG) format, represented as a model in the design space and not as a final representation laid out in the paperspace.

Note: If all required materials are not submitted, a delay in design and/or construction is likely to result.

2.2. Submitting Plans

A plan showing the gas main, and all other utilities shall be submitted to The Town. For plans being submitted for the first time, please direct them to the Town's Gas Department's Operations Manager. The Operations Manager will assign the project to a Hames Engineering representative for review.

The Operations Manager will advise the developer and/or the developer's consultant which designer has been assigned to the project. All future correspondence relating to the project should be directed to both the Operations Manager and the Engineer assigned to the project.

Please submit initial plans with sufficient lead-time. The **minimum** review period is **six (6) weeks** but may vary on a project-by-project basis. The project will then be scheduled for construction. The Town makes every effort to meet scheduling requests, but cannot guarantee all timelines will be met, as schedules can vary depending on factors such as weather, site conditions and existing project workloads.

If input from other external parties is required, this minimum review period may need to be increased. The Town will advise the developer if the scheduling must be adjusted.

2.3. Materials

All polyethylene mains and servicing pipe, fittings, and valves must be CSA B137.4 (Polyethylene piping systems for gas services) approved. Only CSA B137.4 approved yellow polyethylene pipe of grade PE2708 or PE4710 that meets or exceeds testing under the Rural Utilities' Quality Assurance Program shall be accepted for installation. Other material grades may be used provided they are approved prior to use and are covered under B137.4 and the Rural Utility Section's Quality Assurance Program. The pipelines wall thickness shall be SDR11 unless prior approval has been obtained from The Town. When in doubt, ask The Town if your material is acceptable. Fittings and valves, but not pipe, may be black if yellow variants are not available.

2.4. Construction

2.4.1. Reporting

The Contractor is to provide daily construction reports indicating the construction activities completed that day, the materials used and the personnel on site.

2.4.2. Preconditions

The following general preconditions apply to all developments. **These preconditions must be satisfied before construction crews can be moved onto a site:**

- A valid Alberta One Calls must be in place prior to start of construction.
- Developers and builders must review this document in its entirety prior to gas main installation.
- Installation of all deep utilities and other shallow utilities must be completed prior to gas line installation. For 4-party joint trenching projects, only deep utilities must be completed as all

shallow utilities (cable, electrical, telecommunications and natural gas) are installed at the same time.

The developer is responsible for ensuring that all deep utilities and all shallow utilities under the developer's control are installed on the proper alignment and depths. The developer will be responsible for any repairs or alterations if this condition is not met.

- A minimum separation of 1.0m is to be maintained between the gas main alignment and shallow utilities, except in joint trench installations, where a minimum of 0.3m is to be maintained between the gas main alignment and shallow utilities (see Figure A1 for joint trench project).
- For deep utilities, a minimum separation of 2.0m is to be maintained between the gas main alignment and deep utilities at all times.
- If the grade is to be changed, the developer shall not proceed with installing gas main alignments until the grade is within 150mm of final grade and free of obstructions such as dirt piles or building materials.
- A minimum horizontal separation of 1.5m between above grade appurtenances such as fences, trees, light poles, power poles, and the gas main alignment is required.
- For a single trench project where pipe is to be installed with rock present, the pipe is to be bedded in a protective material such as sand. A minimum depth of 150mm between the pipeline and backfill material as well as the pipeline and the bottom of the bedding is to be maintained. See Figure A2 for a typical standalone gas main installation.
- All water valves and manholes must be clearly marked with marker posts.
- Sufficient legal evidence (e.g., survey control point, pins, etc.) must be in place and accessible for the proper location of the gas and other shallow utility alignment.
- Paving and pouring of sidewalks, curbs and other surface improvements may precede gas main installation; however, sleeves must be provided at all road crossing locations (see *2.4.3 Conduit Installation*).
- Benchmark elevations must be provided if gas main installation is to go before curb and gutter installation.
- Driveways should not be installed prior to gas main installation. If a driveway must be preinstalled, a sleeve must be installed under the driveway to allow installation of the gas main, following the same guidelines as for road crossing sleeves (see *2.4.3 Conduit Installation*).

2.4.3. Conduit Installation

If paving and/or concrete work is to be done before gas main installation, the developer must install sleeves under the pavement/concrete for future insertion of gas mains, subject to the following conditions:

- The developer obtains, installs, marks, and pays for the conduit and their installation
- Conduit shall be rigid type DB2 PVC Conduit or approved equal and installed per manufactures recommendations.
- The size, location, length, and depth of the sleeves shall be **determined in conjunction** with The Town.
- For minimum depth requirements*, 2.4.4.2 Pipeline Depth of Cover.*
- For carrier pipe smaller than 168.3 mm OD, the outside diameter of the casing pipe shall be at least 50 mm greater than the outside diameter of the carrier pipe. For carrier pipe 168.3 mm OD or larger, the outside diameter of the casing pipe shall be at least 75 mm greater than the outside diameter of the carrier pipe.
- Sleeve sizes are summarized and shall be determined according to the table below.

Table 1. Sleeve chart outlining pipeline OD vs. minimum conduit ID

Outside Diameter (OD) of Gas Main [mm]	Minimum Internal diameter (ID) of Sleeve [mm]
<60.3	100
88.9	150
114.3	200
168.3	250

- Sleeve placements and size/length must be approved by the gas engineer.
- The developer should try to accommodate paving by pre-installing steel gas mains. Where this is not possible, the developer should omit portions of the pavement/concrete to allow for open-cut installation.
    - Sleeves will not be used for steel gas mains as steel pipe does not achieve adequate cathodic protection inside a sleeve.
- Joints in sleeves will not protrude into the sleeve such that they will interfere with the insertion of the pipe.
- The ends of the installed sleeves will be sealed to prevent the entry of water or other foreign materials into the pipe.
- The ends of each sleeve will be clearly marked with 100mm square wooden posts for marker ball location installations. The above ground portion of the posts must be painted yellow to indicate that the sleeve is for a gas main.
    - Marker balls can be obtained from The Town.

Note: If sleeves are not installed to the proper depth or alignment, are too small, too large, crushed or otherwise unsuitable for use, **they will not be used**. The Town will notify the developer who will be given the following three options for installing a new sleeve:

1. The Developer will correct and install required sleeve at full cost to the developer.
2. The Town may elect to install the gas line at an additional cost to the Developer if in the opinion of The Town the Developer is unable to perform a quality installation.

If The Town must directionally drill underneath or cut the asphalt, The **Developer will be invoiced** at the current rates for the length of drill or cut + 10% markup. For cut asphalt, a gravel, cold-mix, or hot-mix patch will be placed, and The Developer will be invoiced for this repair at the current rates. **The Developer is responsible for the permanent repair and any associated costs**.

If The Developer paves the road without installing sleeves, and is unable to provide sleeves, the following conditions apply:

- The Developer also has the option of having The Town directionally drill the gas main; the developer will be invoiced at the current rates, OR
- The Developer will cut and remove the pavement/concrete, or The Town will perform the work and will invoice the developer at the current rates
- The Developer will compact to municipality standards across the road
- The Developer will place a gravel or cold-mix patch on the ditch and the developer will be invoiced at the current rates. If the developer wishes to make a permanent asphalt repair immediately, the developer must contact the appropriate Town's Construction Supervisor to arrange for the omission of the temporary patch.
- The Developer will backfill and compact cut sidewalks to the bottom grade of the sidewalk. **The Developer is responsible for the permanent repair and any associated costs**.
- The Developer will provide direct access across a road/sidewalk where a gas main is to be installed

2.4.4. Gas Main Installation

2.4.4.1. Pipeline Clearance

- The alignment of the gas lines is to be installed farthest away from the sidewalk where practical
- The minimum clearance to be maintained between a pipeline and any other facility or structure that it parallels or crosses shall be in accordance with the latest edition of the CSA Z662, as outlined in Table 2 below, and should consider any relevant specifications of the owner of the facility or structure

Table 2. Minimum pipeline clearance requirements

Clearance From	Min. Clearance for Buried Pipelines [mm]
Underground structures and utilities (conduits, cables, and other pipelines)	300
Drainage Tile	50

2.4.4.2. Pipeline Depth of Cover

- For service lines and mains, the minimum depth of cover shall be 800mm, measured from the base of the road structure down to the top of the sleeve when the final road structure is being prepared
- For crossing of highways, roads, railways, canals, watercourses and foreign pipelines or cables, the minimum depth of cover shall be determined in accordance with government legislation, CSA Z662 Clause 4.11.7 and TSM Section 4.6.4, as outlined in Table 3 below. The more stringent standard will apply.
- If practical, the maximum depth of cover should be 1,050mm (42”) for pipe that is not crossing another facility, rail or road

Table 3. Minimum pipeline depth cover requirements

Location	Min. Depth of Cover [mm]
Utility Right of Way (w/o crossings)	800
Provincial Highways	Greater of: 1,400 from highway lowest point 2,400 from roadway surface
Local municipal roads, service roads, subdivision roads, park roads, private roads	1,200
Railway (cased)	1,676
Railway (uncased)	3,048
Water crossing	1,200

2.4.4.3. Road Crossings

- If undercutting is necessary, proper gas main exposing practices are required as follows:
    - The developer/road contractor must hand expose or hydrovac each road crossing on each side of the crossing to confirm the depth of the gas line, and must arrange for a Town inspector to inspect the crossing location(s) and the condition of the exposed pipe before backfilling and before road construction is started
    - If undercutting is required, the developer/road contractor must also arrange for a Town Gas inspector to inspect the pipe after undercutting has been completed and

before backfilling to ensure the soil is properly compacted and the pipe is adequately supported underneath

- Road crossing warning signs will be installed on both sides of the road at each gas main crossing. The developer is responsible to ensure that these signs remain intact until paving is completed.
- The developer must acknowledge in writing that the above conditions will be met before shallow utility installation will commence
- **The developer will be responsible for all additional costs incurred by The Town if the above conditions are not adhered to**

2.4.4.4. Within and Parallel to the Roadway before Paving

Option 1 – Roadway at Sub-asphalt Level

- The developer shall prepare the road base to the sub-asphalt level.
- If The Town has elected to install the lines, the developer shall give The Town a minimum of four weeks' notice prior to the road base being completed and shall allow a sufficient window of time (assuming weather conditions are suitable for gas main installation) from the date the road base is completed for The Town to install the gas main within the roadway.
- The roadway is properly prepared to the sub-asphalt level to allow for gas main installation and the gas main alignment is free of obstructions.
- The Town may direct The Developer to have the gas main installation completed within a reasonable timeframe before or from when the road base is completed. This includes removal and replacement of the backfill material, if original material is unsuitable for use, compaction and compaction testing (copies of compaction tests to be provided to The Town), surface gravels, membrane repair if required, and other road repairs related to the installation of the gas main.
- The Developer shall assume responsibility for all associated costs to repair the roadway after gas main installation.

Option 2 – Roadway at Sub-base Level

- The developer shall prepare the road base to the sub-base level (prior to the installation of gravel)
- The developer must agree in writing to keep all equipment off the gas main during (and after) installation of gravel, and to pay for the cost of a Town Gas inspector to be present during the entire time that gravel is being placed over the gas main (conditional upon a Town Gas inspector being available)
- The developer shall give The Town a minimum of four weeks' notice prior to the sub-base being completed, and shall allow a reasonable timeframe from the date the sub-base is completed for The Town to install the gas main within the roadway (i.e., gas main installation will typically be completed within four to six weeks of when the sub-base is completed)
- If the developer does not allow a timeframe that is sufficient for The Town to complete the inspection of the gas main prior to paving of the roadway, the developer shall assume responsibility for all associated costs to repair the roadway after gas main installation
- The Developer will provide compaction test results to The Town
- If undercutting is required after installation of the gas mains, proper gas line exposing practices are required including adequate support and backfill, and the road contractor must arrange for a Town inspector to inspect the pipe prior to and after undercutting, and before backfilling.

Option 3 – Partially Paved

- The Developer shall prepare the road base to the sub-asphalt level, and then may pave the road **except** for where the gas line is to be located. A minimum of 0.5m on either side of the center line of the gas line assignment **must** be left unpaved.
- The Developer shall give The Town a minimum of four weeks' notice prior to the road being paved on either side of the gas line assignment,
- If the developer does not allow a timeframe that is sufficient for The Town to complete inspection of the gas main prior to paving the roadway directly over the gas line assignment, the developer shall assume responsibility for all associated costs to repair the roadway after gas main installation.

2.4.4.5. Lanes

- The developer shall maintain a minimum of 800mm cover over the gas mains while lanes are being constructed. The final depth of the gas main shall be determined in conjunction with The Town's Design department.
- If undercutting is required after installation of the gas mains, proper gas line exposing practices are required. The road contractor must arrange for a Town Gas inspector to inspect the pipe prior to and after undercutting, and before backfilling

2.4.5. Winter Conditions

Due to significantly higher costs associated with winter construction, it is The Town's policy to **minimize construction** during the winter construction season. Winter conditions are generally defined as a minimum of 0.3m of frozen ground, snow cover which requires significant clearing, or colder than -15°C. The Town will determine winter conditions.

Unless the shallow utilities are to be installed using joint trenching, gas mains should not be installed during the winter season unless there are a significant number of buildings at the framing stage or beyond that will require heat and temporary heat would be burdensome or impractical.

2.4.6. Service Line

Service tees rather than butt fuse tees are preferred for service lines to the premise. The electrofusion method is the preferred joining method for service tees. The town may elect to perform the service tee fusions at a cost to the developer.

2.4.6.1. Timing

- Service lines to each parcel or lot are to be installed upon the framed completion for each individual dwelling/building
- For servicing to individual properties, the developer/builder must complete The Town's natural gas service line application and the cost estimate form. This is coordinated with The Town's coordinator.
- After applying for a gas service line, The Town will conduct a site inspection to ensure everything is in order before proceeding with the installation. If the site inspection is satisfactory, The Town will schedule the installation of the service line and complete the process. However, if a main extension is required to service a parcel or lot, additional time may be needed.
-

- The installation schedule will be determined by The Town's gas department at designated building stage
- Once the installation of meter set is complete, a licensed gas fitter must fill out the Municipal Affairs Service Completion Notification prior to The Town unlocking the gas service. This form must be filled out for both temporary and permanent gas services.
- Please note that The Town is not responsible for pipefitting and attachment to the new service downstream of the meter set. The gas utility operators of The Town are trained to operate the gas distribution system upstream of the gas meter connection. Once you have completed the necessary forms, they will be submitted to The Town's Utility Coordinator before gas service can be provided.

2.4.7. Service Stubs

If for some reason the developer requires service stubs to be extended onto the lots before the individual houses are ready (i.e., to pave a lane), The Developer must agree ahead of time to the stub locations. It is also the developer's responsibility to ensure that the house piping allows the gas meter to be installed on the same side of the lot as the service stub. If this is not the case, **the abandonment of the existing service stub and reinstallation will be completed at the developer's expense.**

Meter locations **must** be outside and **must** be approved by The Town in the planning stages. Locations are governed by local regulations with respect to proximity to opening windows, fresh air intakes, electrical outlets, water sources, exhausts, direct vent appliances, other utility meters, etc. (see Figure 5.2 in the TSM). In addition, a meter must be installed in readily accessible locations and **cannot be located** under a deck, porch, or bay window. Driveways, carports, or areas where high traffic is expected are also **unacceptable locations.**

If deemed necessary by The Town, the developer may be asked to install a stub into a lot adjacent to a gas main or service line.

2.4.8. Tracer Wire

Tracer wire will be installed within 150mm of the gas main. A conductivity test of the tracer wire shall be completed by the installer to ensure future utility locating can be done. Tracer wire be a minimum of 12 AWG. On bore sections, there shall be two tracer wires tapped to the pipe, the distance between tape shall be less than 3m.

2.4.9.1. Requirements and Methods of Pipe Joints

The Town will approve any polyethylene pipeline joiners. A person who intends to carry out a fusion of polyethylene pipe under Clause 12 in Z662 must be trained and certified by an agency approved by Chief Officer of the Rural Utilities Section and must produce a current and valid certificate (ticket) upon request.

A fusion procedure shall be submitted to The Town prior to construction. A fusion procedure is to be used for polyethylene pipe joining, especially for dissimilar pipe grades. The Town prefers the electrofusion method for polyethylene pipeline joining, especially when joining different pipe grades. Butt fusion is an alternative method of joining for polyethylene pipe that can be used if the fuser can demonstrate competence to The Town and the pipelines' compatibility have been proven by test. If a fusion has mismatched material grades between pipe, fittings, and valves, the fuser shall take into consideration the different melt indices of the material to ensure a quality join. Pipeline joining by

mechanical methods shall not be used. The Town may elect to perform the fusion at a cost to the developer. Fusions shall not take place below -15°C without adequate precautions in place to ensure a quality fusion.

2.4.9.2. Joining by Electrofusion

Electrofusion joints shall be made in accordance with documented procedures that have been proven by tests. Procedures shall include:

a) the equipment and tooling required.
b) the temperature operating range of the equipment.
c) the joining surface preparation requirements.
d) the alignment requirements.
e) the joining clamp time requirements.
f) the clamped cooling time requirements.
g) the elapsed time requirements before the joint can be subjected to high stress; and
h) cold weather joining techniques

Electrofusion joints shall be held with clamps or other aligning devices until cooled. The minimum hold time and minimum time prior to exposure to installation stresses shall be stated in the operating procedure.

Data from the electrofusion processor may be required to be submitted to The Town's representative.

2.4.9. Qualifying of Pipelines

This section covers pressure testing and qualifying of low-pressure pipelines to operate at specific design pressures. Such pipelines will be manufactured from plastic materials including SDR 11 PE-2708 resin (MDPE) or SDR 11 PE-4710 plus resin (HDPE).

The operating pressure (MOP) at which a distribution pipeline may operate is derived from several factors including material properties, the hoop stress at which the pipe may operate and the use of safety factors. The Town's natural gas distribution network operates at a pressure of 241 kPag (35 psig). All pipe will be capable of containing 700 kPag (100 psig) pressure.

2.4.10.1. Pressure Testing

Pressure testing of polyethylene systems shall be at a pressure that is 1.4 times the design MOP and shall be in accordance with the requirements of the most recent edition of the CSA Z662 and the TSM. The recommended test pressure for PE2708 or PE4710 SDR 11 pipe is 980 kPa, even if it is intended to operate at a lower pressure in a pipeline system.

The duration of a pressure test should be based on the length of the pipeline which is under test following a 30-minute stabilization period after pressurizing. All gas mains will be pressure tested with air at 980 kPag (140 psig) for a minimum test duration of not less than what is specified in Table 3 below:

Table 3. Pressure Recording Test Time Device Chart

Length of Pipeline Under Test	Minimum Test Duration	Recording Device Type
< 100 m, & ≤ 33.4 mm O.D.	30 minutes	Pressure Gauge
< 2,000 m, & ≤ 60.3 mm O.D.	4 hours	Chart/Digital
< 6,000 m, & ≤ 60.3 mm O.D.	12 hours	Chart/Digital
< 12,000 m, & ≤ 60.3 mm O.D.	24 hours	Chart/Digital
< 5,500 m, & ≤ 88.9 mm O.D.	24 hours	Chart/Digital
< 3,200 m, & ≤ 114.3 mm O.D.	24 hours	Chart/Digital

With the advent of digital gauges, when properly calibrated, the requirement for charting can be performed via digital recording devices. These recording devices must be capable of detecting a leak within the guidelines depicted in the test duration calculator. The resulting information must be transferred into paper format and maintained with the other relevant pipeline construction documents for the life of the pipeline. The recorder shall have a suitable range for the expected test pressures and, if applicable, the chart recorders shall be selected such that the pressure readings occur between 25% and 90% of full pressure range of the instrument. Pressure recorders shall be calibrated against the deadweight tester before and after the test and adjusted accordingly.

A record of the pressure test shall be submitted to The Town. Pressure test devices shall be calibrated within the last 12 months and these records submitted as well.

2.4.10.1.1. Pressure Test Procedure

a) Verify accuracy of recording instrument prior to test
b) On chart or in digital recorder remarks list:
    i) Line and License number
    ii) To from and location
    iii) Outside diameter and wall thickness
    iv) Test medium
    v) Planned test duration
c) Testing shall be conducted at the pressures and durations as specified in the foregoing Test Parameters section. No testing shall be conducted at ambient, or material temperatures colder than -20ºC.
d) Ambient and underground pipe temperature shall be monitored and recorded during testing. The temperature probe for the underground pipe temperature shall be secured to the pipe at a location remote (minimum 30m) from any above ground riser or assembly and insulated to minimize influence from ambient weather.
e) A minimum of two 24-hour chart or digital recorders and separate pressure gauge shall be used to record the test. Care shall be taken to ensure that all connections to the pipeline, test assembly and recording equipment provide adequate flexibility to avoid transferring loads. The pressure recorders shall be located outside the restricted activity area. Any hoses or piping used to remotely connect to the pipeline assembly shall be secured or weighted to prevent potential whiplash. Only authorized personnel shall be permitted within the restricted area to monitor the recording equipment and check for leaks.
f) Test medium shall be dehydrated and conditioned to enter the pipeline at a temperature not less than -20°C nor exceeding 37°C.
g) Pressurization sequence (for low pressure only):
    i) Introduce pressure slowly, raise up to approximately 25% of MOP and allow to stabilize for a minimum 15 minutes.

ii) Monitor pressure and inspect all exposed joints and connections for leakage. Repair as necessary.
iii) Continue pressuring in increments of approximately 200 kPag (29 psig) and hold for approximately 10 minutes at each stage.
iv) Hold pressure at approximately MOP for minimum 20 minutes and monitor for leakage.
v) Continue increasing pressure in stages to Conditioning Pressure of approximately target test pressure and hold until pressure stabilizes or for 60 minutes.
vi) Increase pressure in stages to less than the maximum strength test pressure and allow the pipe to relax for 15 minutes. Repeat this process two more times and then allow to stabilize, this process can take up to 8 hours.
vii) Following stabilization period, and if required, increase pressure to approximately maximum test pressure, allow to stabilize and then initiate strength and leak test. Maintain test for specified duration.
viii) Following satisfactory testing, slowly de-pressurize pipeline. Caution, verify that all pressure has been released by confirming pressure at a separate connection point (Note: expanding gas experiences a chilling affect which could freeze liquid water that may condense from the gas stream, blocking valves and giving the appearance of zero pressure.

h) Verify and document the accuracy of recording instrument after the test.

2.4.10. Backfill and Compaction

- Backfilling shall be performed in such a manner that neither the pipe nor the pipe coating is damaged by the backfill material or by subsequent surface activities
- Backfilling procedures shall not cause distortion of the pipe cross-section that would be detrimental to the operation of the piping or passage of cleaning or internal inspection devices
- Backfilling shall be performed in such a manner as to prevent excessive subsidence or erosion of the backfill and support material.
- All gas mains and services shall be sand bedded with free running uniformly graded sand. A sand padding of at least 150mm is required below and around the entire pipeline circumference prior to the application of conventional backfill measures (see Table A1 for sieve analysis)
- Backfill material can consist of gravel or native fill (if suitable) with fill to final grade with topsoil or other suitable cover
- If additional compaction is requested, the developer will be responsible for the associated costs
- All winter backfill settlements must be filled and re-compacted as per municipal specifications within the specified timeline
- New backfill material is imported if the excavated material is unsuitable for backfill under the expense of the developer

2.5. Interim Heating

When buildings within a subdivision require an interim heat source before gas mains are installed, the developer may choose to use an alternate form of energy until natural gas service is available.

2.6. Inspection

All gas mains and service installations shall be subject to inspections by The Town's gas department. Inspections will be conducted at:

- Completion of trenching
- Pre-bedding
- Main installation and pipeline joining process
- Pre-backfilling
- Tracer wire installation and conductivity test
- Post backfilling

Inspections may need to be completed by The Town's gas engineer. This cost is to be charged to the developer. In addition, The Town has the right to inspect at any given time throughout the construction of the project.

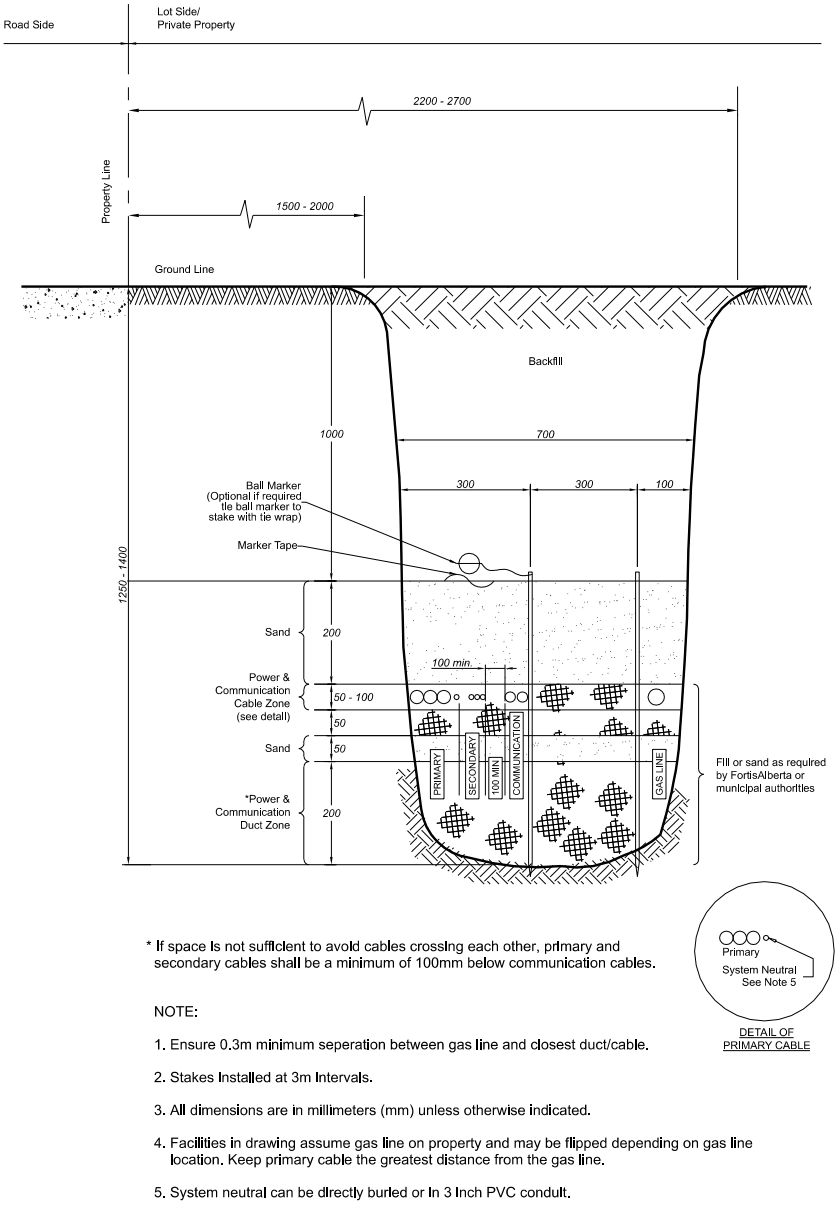
2.7. Costs

All costs associated to develop and/or install a natural gas system are to be born by the developer. This includes but is not limited to natural gas mains, services, related equipment, design costs and all other services required for the successful completion of the project. Costs for equipment/system upgrades required for the development will be analyzed by Hames Engineering and The Town's planning and development department.

3. Applications

3.1. Appendix A

Four party construction - Gas mains in most new residential subdivisions in The Town are installed using a joint trench construction method, where all shallow utilities (power, telephone, cable, and gas) are installed in one common trench at the same time. This method of installation, while more convenient for both the developer and the utility companies, requires extra communication and coordination for all parties involved.

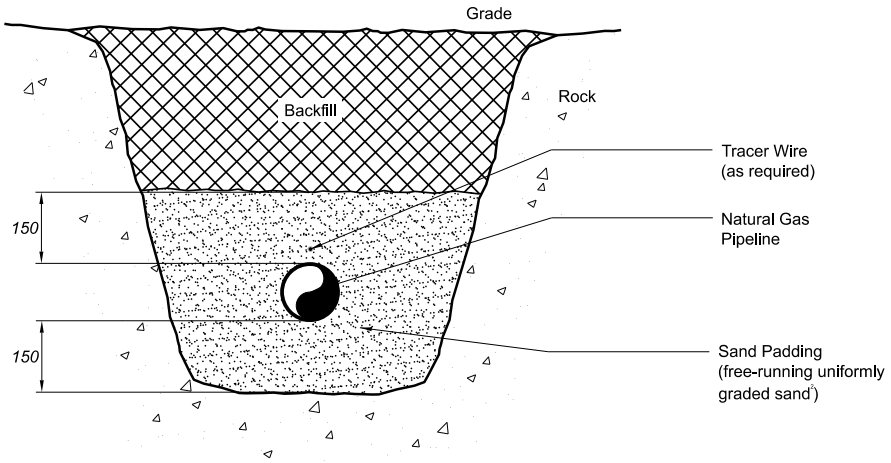


* If space is not sufficient to avoid cables crossing each other, primary and secondary cables shall be a minimum of 100mm below communication cables.

NOTE:

1. Ensure 0.3m minimum seperation between gas line and closest duct/cable.
2. Stakes Installed at 3m Intervals.
3. All dimensions are in millimeters (mm) unless otherwise indicated.
4. Facilities in drawing assume gas line on property and may be flipped depending on gas line location. Keep primary cable the greatest distance from the gas line.
5. System neutral can be directly buried or in 3 inch PVC conduit.

Figure A1. Four party joint trench project



NOTE:

1. All dimensions are in millimeters (mm) unless otherwise indicated.
2. Compacted bedding and backfill material.

Figure A2. Single trench project

Type	Standard Sieve Size [mm]	Percentage Passing by Weight (%)
Sand	10	100
	5	95 – 100
	2.4	80 – 100
	1	50 – 85
	0.6	25 – 60
	0.3	10 – 30
	0.15	2 – 10
Gravel	25	100
	16	75 – 100
	9.5	45 – 75
	4.75	32 – 62
	1	17 – 43
	0.3	8 – 24
	0.075	2 – 6
Pit Run Gravel	100	100
	75	80 – 100
	25	60 – 80
	5	25 – 45
	1	16 – 25
	0.6	8 – 18
	0.15	4 – 10
	0.075	2 – 6
Washed Gravel	50	100
	19	80 – 95
	4.75	50 – 70
	2	40 – 55
	0.425	10 – 20
	0.075	0 – 5

Table A1. Sieve analysis for pipeline bedding material