



Rural Municipality of Reynolds

Municipal Standards

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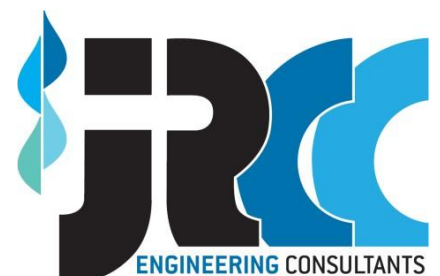


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Appendix A

Certificate of Commencement

Construction Completion Certificate

Final Acceptance Certificate

[Appendix B](#)

Standard Chart for Service Connection Locations

[Appendix C](#)

Drawing 1: Typical Gravel Road Cross Section

Drawing 2: Typical Asphalt Road Cross Section

Drawing 3: Residential Split Lot Drainage - House Perching

Drawing 4: Residential Back to Front Lot Drainage - House Perching

[Appendix D](#)

As-built Infrastructure Data Submission Requirements

RURAL MUNICIPALITY OF REYNOLDS

MUNICIPAL STANDARDS

The following are municipal standards for the Rural Municipality of Reynolds. These standards are to be considered as a guide outlining the minimal acceptable requirements that must be met or exceeded for developments in the Municipality.

REVISION HISTORY

DATE:	UPDATE:	BY:
February 2025	Original copy	JRCC
April 07, 2025	Corrected mismatch between table of contents and page numbers.	MC
December 05, 2025	Updated clause 5.2.2.7.	JRCC

1.0 GENERAL

The Developer is advised that the specifications contained in the Municipal Services Standards shall apply to the services required for the development. In the case of conflict between the Development Agreement and Municipal Services Standards, the Development Agreement shall govern.

The following are the minimum Municipal Services Standards that must be met or exceeded for developments within the Rural Municipality (RM) of Reynolds. The Municipality may impose a more stringent standard as Council deems necessary.

Designs for all municipal sewage collection systems and water distribution systems shall conform and comply with the most current Ten State Standards Guidelines. Design plans and specifications must be designed by a professional engineer registered to practice in the Province of Manitoba and submitted to the Manitoba Environmental Assessments and Licensing Branch and/or the Office of Drinking Water and the Municipality for approval. All road and drainage plans and specifications shall also be designed by a professional engineer registered to practice in the Province of Manitoba and submitted to the Department of Sustainable Development and the Municipality for approval. All plans are to include an APEGM certificate of authorization.

Where it has been determined that the Developer has not followed the established standards, the Municipality reserves the right to implement any measures deemed necessary, including utilizing its own forces, at the expense of the Developer, to ensure that the services have been properly constructed and maintained. In any situation where the Municipality utilizes its own forces to complete or maintain services as deemed necessary, this action will not release the Developer of any maintenance or other requirements to fulfill their obligation.

Prior to the commencement of any construction or development within the development the Developer shall obtain written authority from the Municipality. Construction and development are deemed to include excavation, clearing, and grubbing or stripping of top soil. This authority will only be provided after satisfactorily review of plans and all required approvals being obtained. Once all approvals have been obtained, an onsite meeting shall be held prior to construction of any works. Representatives of the Developer and the Municipality shall be present at the meeting. The Developer is encouraged to have their Engineer(s) and contractor(s) at the site meeting. The meeting will be used to review the construction schedule/sequence and outline inspection procedures and quality control measures.

The Developer is advised that their Engineer shall undertake all works necessary to complete design and contract administration, as-constructed plans and related certification of gravel gradation, gravel and subgrade densities, sewer pipe televising, etc. If the Municipality determines that construction supervision

is not being completed on an ongoing basis the Municipal Engineer shall be employed to provide the required services, charges will be billed to the Developer's letter of credit.

The maintenance period as provided for in the development agreement will commence after the Municipality notifies the Developer in writing that the Municipality has provisionally accepted the works by endorsing the Construction Completion Certificate attached as Appendix A.

The development shall be inspected after the expiry of the maintenance period and any damage or deficiencies shall be remedied by the Developer before the Municipality finally accepts such service by endorsing the Final Acceptance Certificate that is in Appendix A.

Application for final certification shall be as per development agreement. All municipal services and additional facilities whether maintained in perpetuity by the Municipality or others must be completed in accordance to these standards prior to final certification application.

2.0 WATER DISTRIBUTION SYSTEMS

The watermain design shall conform to the standards outlined in this document. The Municipality reserves the right to increase or decrease the required standards as it relates to site specific cases. The developer shall submit watermain design plans for the development completed by a Professional Engineer.

2.1 Approved Materials

2.1.1 Watermain Pipe and Apparatuses

1. Pipe: PVC to be PVC 1120 Series 160 or HDPE DR 11.
2. Minimum watermain pipe size to be 150 mm. Water mainline sizes based on friction loss calculations and water demand for the specific size of development. Minimum watermain pipe size around cul-du-sacs to be 50 mm.
3. Pipe and Fittings: All pipe and fittings shall be certified by CSA and ULC as being made in accordance to their specifications and stamped accordingly with the CSA logo and ULC logo. Pipe to be made to CSA B137.3, ULC and NSF Standard 14 and 61.
4. Valves: To be epoxy coated AWWA C-509 resilient seat gate valves complete with valve box. All exposed bolts to be 304 or 316 stainless steel. Acceptable type Mueller 2360 Series Resilient Wedge Gate Valve, Clow Resilient Wedge Gate Valve or approved equal.
5. Hydrants: Conform to AWWA C-502. Standard for dry-barrel fire hydrants and be approved by the Underwriters Laboratory of Canada. Design for working pressure of 1,000 kPa with two 65 mm threaded hose outlets and one 112 mm pumper nozzle. Acceptable type McAvity Brigadier M67 or approved equal.

2.1.2 Water Service Pipe

1. Pipe: Minimum CTS SDR 9 series 200 or SDR cross-linked polyethylene PEX tubing suitable for potable water and CSA certified.
2. Fittings: To be Mueller compression couplers or approved equal
3. Wetted surfaces of plumbing products components: Wetted surfaces of fittings such as corporation stops, couplers, curb stops, and saddles shall use a low lead alloy that complies with ANSI/AWWA C800 (latest revision) for maximum lead content of the wetted surfaces to be <0.25% (by weight) lead.
4. Curb Stop Valves: Water brass, ball type curb stop valves, acceptable type Mueller 300 Ball Curb Valve or approved equal.

5. Corporation Stops: Use of corporation main stop valves is mandatory and shall be bronze, ball type with standard tapered threaded inlet suitable for tapping via service saddle to PVC watermains with compression type outlet, acceptable type Mueller or approved equal.

2.1.3 Water Service Connection to Main

1. Saddles: steel body with stainless steel straps and bolts, IPS threaded insert and gaskets. Acceptable products Robar 2606 Series Saddle or approved equal.

2.2 Design and Construction

2.2.1 General

1. Watermain plans shall be submitted to the Manitoba Office of Drinking Water for approval.
2. Where applicable, obtain the necessary approvals for all watermain piping crossing or installed within railway or highway allowances.
3. Watermain construction will be completed according to the latest revision of the Manitoba Water Services Board Construction Specifications and the Ten State Standards.
4. In the case of conflict, the Development Agreement and associated standards will govern over the Manitoba Water Services Board Construction Specifications.

2.2.2 Watermain Piping Design

1. The Developer, at a minimum, shall design the mainline for domestic flow as directed and approved by the Municipality.
2. Distribution mains shall be continuous (looped) whenever possible. Clean-outs or fire hydrants will be required at dead ends for flushing purposes.
3. The placement of valves shall be such that any section of the system can be isolated (maximum 30 lots). Watermain valves shall be installed in line with road allowance property lines. Valves shall be resilient seat gate type.
4. The maximum distance between fire hydrants shall be 150 metres.
5. All mainlines shall have a minimum cover of 2.6 metres.
6. Water mainlines shall be located at a minimum of 3.0 metres from the property line as shown in Appendix C.
7. Water service lines shall be located 4.0 m from property line, parallel to the sewer service line.

2.2.3 Watermain Piping Construction

1. The watermain line pipe shall be bedded in and covered with sand bedding.
2. Swab all mains prior to hydrostatic pressure testing and disinfection.
3. Hydrostatic leakage testing of the watermain line pipe shall be completed after installation works are complete. Test results to be provided to the Municipality for acceptance.
4. Chlorination and disinfection of the watermain shall be completed after installation works are complete. Test results to be provided to the Municipality for acceptance.
5. Hydrostatic leakage testing and disinfection of watermains and water services to be in accordance with the latest revision of the Manitoba Water Services Board Construction Specifications.
6. Developer to cover the cost of all testing and re-testing if required.
7. The Developer shall install water service lines to all lots within the development.
8. Curb stops shall not be installed within existing or proposed sidewalks unless otherwise approved by the Municipality.
9. Developer to cover the cost of all restoration to Municipal right of way.
10. Notify the Municipality 48 hours prior to requiring gate valve operation. Operation of the gate valve is not allowed on weekends or holidays.
11. Main line operations requiring valves to be shut off must be done during typical work hours (8:30am - 3:30pm), and is not allowed on weekends or holidays unless otherwise approved by the Municipality.
12. The Developer shall complete the Standard Chart for Service Connection Locations (See Appendix B) for all water service lines.

3.0 GRAVITY WASTEWATER SEWER

The gravity wastewater sewer design shall conform to the standards outlined in this document. The RM of Reynolds reserves the right to increase or decrease the required standards as it relates to site specific cases. The Developer shall submit gravity waste water sewer design plans for the development completed by a Professional Engineer.

3.1 Approved Materials

3.1.1 Sewermain Pipe

1. Pipe: Minimum pipe size to be 200 mm PVC PSM SDR 28.
2. Pipe and Fittings: Meet or exceed all the requirements of ASTM Specification D3034 and CSA Standards B182.1 and B182.2, BNQ 3624-130.
3. Standard lengths: 4 or 6 metres nominal.
4. Pipe: Manufactured from clean, virgin approved class 12454-B compound conforming to ASTM D1784.
5. PVC pipe gaskets, flexible rubber in accordance with ASTM F477.

3.1.2 Sewer Service Pipe

1. Pipe:
 - a. Minimum 100 mm PVC PSM SDR 28 for single family residential units.
 - b. Minimum 150 mm PVC PSM SDR 28 for multi-family and commercial units.
2. Pipe and Fittings: Meet or exceed all the requirements of ASTM Specification D3034 and CSA Standards B182.1 and B182.2, BNQ 3624-130.
3. Standard lengths: 4 or 6 metres nominal.
4. Pipe: Manufactured from clean, virgin approved class 12454-B compound conforming to ASTM D1784.

3.1.3 Sewer Service Connection to Mainline

1. For PVC SDR Sewer Pipe:
 - a. Use service tees on the main for all proposed lot services.
 - i. Complete with a full-face rubber gasket to provide a positive seal and a gasket bell similar to the mainline pipe that provides positive method to connect service piping to the main. The bell

shall have a positive stop which prevents the pipe from penetrating the mainline wall under any circumstances.

2. Use saddle clamp tee only where a lot service location cannot be identified during construction.
 - a. PVC type with two all stainless-steel clamps and a male insert stub that extends through the mainline wall and is flush with inside of main to ensure centering of the saddle over the drilled hole in the main.

3.1.4 Manholes

1. Precast manhole sections: to ASTM C478 and CSA A257.4. Top section to be flat slab top type with opening offset for vertical ladder installation.
2. Minimum sizing and sections: 1,200 mm dia. x 1,220 mm base, 1,200 mm riser sections to suit, 1,200 mm to 760 mm flat top reducer, a 760 mm dia. traffic bearing manhole frame and cover. Top riser section below flat top reducer to be 300 mm, height of remaining riser sections should be such that the number of joints is minimized.
3. Joints: to be made watertight using flexible plastic gasket that meets or exceeds ASTM C990 and US Federal specification SS-S210-A.
4. Ladder rungs: to CSA G30.12, No 25M billet steel deformed bars, hot dipped galvanized to CSA G164. Rungs to be safety pattern (drop step type)
5. Adjusting rings: to ASTM C478M.
6. Grit Catchers: Use Cretex Manhole Lid Seal or approved equal.

3.1.5 Frame and Cover

1. Frames and covers to have the following requirements:
 - a. Metal covers to bear evenly on frames
 - b. Gray iron castings: to ASTM A48, strength class 30B
 - c. Castings to be coated with two applications of asphalt varnish
 - d. Manhole frames and covers: heavy duty municipal type for road service complete with two 25 mm lifting holes.

3.1.6 Bedding Material

1. Bedding Sand: Bedding Sand shall be free running and clean. Sand shall be graded within the following limits:

Can. Metric Sieve Size	Per Cent Total Dry Weight Passing
------------------------	-----------------------------------

10,000	100
5,000	90 - 100
630	25 - 60
80	0 - 3

3.2 Design and Construction

3.2.1 General

1. Gravity wastewater sewer plans shall be submitted to the Manitoba Environment and Climate Change for approval to construct or alter a wastewater collection system.
2. Where applicable, obtain the necessary approvals for all sewer piping crossing or installed within railway or highway allowances.
3. Gravity wastewater sewer construction will be completed according to the latest revision of the Manitoba Water Services Board Construction Specifications.
4. In the case of conflict, the Development Agreement and associated standards will govern over the Manitoba Water Services Board Construction Specifications.
5. Sump pumps and weeping tile drains are not permitted to discharge into the gravity sewer system.

3.2.2 Gravity Waste Water Sewer Piping Design

1. All mainlines and service lines shall have a minimum soil cover of 2.6 metres.
2. Gravity wastewater sewers shall be designed to have a minimum flow velocity of 0.60 m/s and maximum velocity of 3.0 m/s.
3. Pipe sizing and capacity shall be determined by utilizing the Manning's Formula using "n" value of 0.013.
4. All gravity wastewater sewer, lift stations, and force mains shall be designed for peak flow conditions. (Design Flow = Peak Flow = Peaking Factor times Average Daily Flow)
5. Peaking factor shall be a minimum of 3.0 or as determined using the Harmon Peaking Factor.
6. Gravity sewer mainline pipe slopes shall be designed in accordance with the Ten State Standards recommended minimum slopes as per the following:

Diameter	Minimum Slope
200	0.40%
250	0.28%

300	0.22%
375	0.15%
450	0.12%
525	0.10%

7. Minimum gravity sewer service line pipe slopes shall be as per the following:

Diameter	Minimum Slope
100	1.00%
150	0.50%

8. Manholes shall be located at the upstream end of each line, and at all changes in pipe size, grade, material, and alignment.
9. The maximum straight run distance between manholes shall not exceed 120 metres.
10. Sewer mainlines shall be located 3.0 metres from property line as shown in Appendix C.
11. When connecting service lines to existing gravity sewer mains, indicate the connection type (i.e. Saddle, tee, etc.). Wherever possible, avoid connecting the service line directly into an existing manhole. Gravity sewer mainlines must connect into an existing manhole for maintenance purposes.
12. Abandoning existing manholes and gravity sewer piping must be completed in accordance with the latest revision of the Manitoba Water Services Board Construction Specifications.

3.2.3 Gravity Waste Water Sewer Piping Construction

1. The gravity sewer main pipe shall be bedded in and covered with sand bedding.
2. A mandrel test of the gravity sewer mainline pipe shall be completed after installation works are complete.
3. The gravity sewer main pipe shall be televised after installation works are complete.
4. Mandrel testing and pipe televising to be completed in accordance with the latest revision of the Manitoba Water Services Board Construction Specifications.
5. The Developer shall install sewer service lines to all lots within the development.
6. The Developer shall complete the Standard Chart for Service Connection Locations (See Appendix B) for all gravity sewer service lines.

4.0 LAND DRAINAGE SEWER SYSTEMS

The land drainage sewer (LDS) design shall conform to the standards outlined in this document. The RM of Reynolds reserves the right to increase or decrease the required standards as it relates to site specific cases. The Developer shall submit LDS design plans for the development completed by a Professional Engineer.

4.1 Approved Materials

4.1.1 Land Drainage Sewer Pipe

1. Pipe:
 - a. PVC Pipe and Fittings: Use PVC DR35 minimum or approved equal. Meet or exceed all the requirements of ASTM Specification F794 and CSA Standard B182.4, NQ 3624-135 and AASHTO M304. Pipe: Manufactured from clean, virgin approved class 12454-B compound conforming to ASTM D1784.
2. Minimum LDS pipe size to be 250 mm.
3. Provide water tight connections.

4.1.2 Catch Basins

1. Precast manhole sections: to ASTM C478. Top section to be flat slab top type with opening offset for vertical ladder installation.
2. Sizing and sections: Minimum 900 mm dia. x 1,220 mm base unless otherwise indicated on the plans, 900 mm riser sections to suit, 900 mm to 760 mm flat top reducer, a 760 mm dia. traffic bearing manhole frame and cover (open cover). Top riser section below flat top reducer to be 300 mm, height of remaining riser sections should be such that the number of joints is minimized.
 - a. Provide plastic hood complete with hinge and pin at catch basin outlet pipe location.
3. Ladder rungs: to CSA G30.12, No 25M billet steel deformed bars, hot dipped galvanized to CSA G164. Rungs to be safety pattern (drop step type)
4. Adjusting rings: to ASTM C478M.

4.1.3 Manholes

1. Precast manhole sections: to ASTM C478 and CSA A257.4. Top section to be flat slab top type with opening offset for vertical ladder installation.

2. Sizing and sections: Minimum 1,200 mm dia. x 1,220 mm base, 1,200 mm riser sections to suit, 1,200 mm to 760 mm flat top reducer, a 760 mm dia. traffic bearing manhole frame and cover. Top riser section below flat top reducer to be 300 mm, height of remaining riser sections should be such that the number of joints is minimized.
3. Joints: to be made watertight using flexible plastic gasket that meets or exceeds ASTM C990 and US Federal specification SS-S210-A.
4. Ladder rungs: to CSA G30.12, No 25M billet steel deformed bars, hot dipped galvanized to CSA G164. Rungs to be safety pattern (drop step type)
5. Adjusting rings: to ASTM C478M.
6. Grit Catchers: use Cretex Manhole Lid Seal or approved equal.

4.1.4 Frame and Cover

1. Frames, covers to have following requirements:
 - a. Metal covers to bear evenly on frames. A frame with cover to constitute one unit. Assemble and mark unit components before shipment.
 - b. Gray iron castings: to ASTM A48, strength class 30B.
 - c. Castings to be coated with two applications of asphalt varnish.
 - d. Catch Basin frames and covers: heavy duty municipal type for road service complete with open grating.

4.2 Design and Construction

4.2.1 General

1. LDS plans shall be submitted to the municipality for approval.
2. Where applicable, obtain the necessary approvals for all LDS piping crossing or installed within railway or highway allowances.
3. LDS construction shall be completed according to the latest revision of the Manitoba Water Services Board Construction Specifications.
4. In the case of conflict, the Development Agreement and associated standards will govern over the Manitoba Water Services Board Construction Specifications.

4.2.2 LDS Piping Design

1. All LDS mainlines shall be designed to 1 in 5-year storm conditions.
2. Storage volumes and allowable run-off shall be determined by utilizing the Rational Method.

3. LDS mainline pipe slopes shall be designed based on maximum flow requirements and Ten State Standards recommended minimum slopes as per the following:

Diameter	Minimum Slope
250	0.28%
300	0.22%
375	0.15%
450	0.12%
525	0.10%
600	0.08%
750	0.058%

4. Catch basins or manholes shall be located at the upstream end of each line, and at all changes in pipe size, grade, material, and alignment.
5. The maximum straight run distance between catch basins or manholes shall not exceed 120 metres.
6. LDS mainlines shall be located at a minimum of 3.0 metres from the property line.

4.2.3 LDS Piping Construction

1. The LDS mainline pipe shall be bedded in and covered with sand bedding.
2. A mandrel test of the LDS mainline pipe shall be completed after installation works are complete.
3. The LDS mainline pipe shall be televised after installation works are complete.
4. Mandrel testing and pipe televising to be completed in accordance with the latest revision of the Manitoba Water Services Board Construction Specifications.

5.0 ROAD, SIDEWALKS, AND DRAINAGE

The road and drainage design shall conform to the road standards found in this document. The Municipality reserves the right to increase or decrease the required standards as it relates to site specific cases. The Municipality will determine whether existing road(s) leading to the development require widening and or upgrading. The developer shall submit a road plan for the development completed by a Professional Engineer.

The minimum road allowance width shall be 20.1 metres (66') unless deemed otherwise by the RM. For feeder roads or where required as determined by drainage requirements and/or the Municipality the road allowance shall be 30.475 metres (100'). The road right-of-way radius for a cul-de-sac shall be a minimum of 18.288 metres (60').

5.1 Approved Materials

5.1.1 Granular Base

1. Use Class "A" Granular Material as described in latest revision of the Manitoba Transportation and Infrastructure (MTI) Standard Construction Specifications.
2. Use Granular "B" Base Course as described in the latest revision of the MTI Standard Construction Specifications.

5.1.2 Granular Sub-Base

1. Use Class "C" Granular Material as described in latest revision of the MTI Standard Construction Specifications.

5.1.3 Geotextile

1. Use non-woven synthetic fibre fabric supplied in rolls
2. Physical Properties based on MARV (Minimum Average Roll Values) determined in accordance with ASTM D4759:

Physical Property	Requirements	Test Method
Grab Tensile Strength	800 N - minimum	ASTM D4632
Puncture Strength	460 N - minimum	ASTM D4833
Trapezoid Tear	330 N - minimum	ASTM D4533
Apparent Opening Size	0.220 mm - maximum	ASTM D4751
Permittivity	1.5 sec ⁻¹ - minimum	ASTM D4491
U.V. Resistance	70% per 500 hrs - minimum	ASTM D4355

5.1.4 Concrete

1. Cement to be according to CAN3-A23.1-M77; type GU.
2. Minimum 28-day compressive strength to be 32 MPa.
3. Slump to range between 50 - 80 mm.
4. Entrained air by volume to be 5 - 8% for 20 mm aggregate.

5.1.5 Asphalt Concrete

1. To be in accordance with the MTI Standard Construction Specification.
 - a. Bituminous Pavement Class B shall be used.

5.1.6 Culverts

1. Culvert type:
 - a. Corrugated Steel Pipe: to CSA CAN3-G401-minimum thickness of 1.6 mm
 - i. Prefabricated end sections as indicated.
 - ii. Couplers and Bolts: of same material as pipe.
 - b. HDPE:
 - i. High density polyethylene pipe and fittings shall be made of virgin PE compounds in conformance with ASTM D3350 and manufactured in accordance with CSA B182.8. Piping to have a minimum stiffness of 320 kPa.
 - ii. Interior of pipes to be smooth walled with a Manning's 'n' of 0.013 or less.
 - iii. Fittings to be of same material and manufactured to the same specifications as the piping. Joints to be CSA certified water tight to 75 kPa in accordance with ASTM D3212.
 - iv. Piping to be Boss 2000 with Ultra Stab 75 joints or approved equal.
 - v. Standard lengths: 4 or 6 metres nominal.

5.1.7 Material Testing

1. All road material shall be available for inspection and testing by the Municipal Engineer and/or by the testing laboratory so designated.
2. Complete initial testing of all granular materials not supplied by the Owner and provide acceptable representative gradation results and densities from a certified laboratory as approved by the Engineer. This includes a Standard Proctor Density

for each class of material. After obtaining an acceptable gradation result, complete a follow-up test of gradation results and densities after the first 1,000 tonnes are produced and delivered. Granular materials include:

- a. Granular base.
 - b. Granular sub base.
 - c. Sand used for bedding and backfill.
3. After testing completed in 2. above, complete additional gradation testing at intervals which shall not exceed 4,000 tonnes, or as determined by the Engineer. The Engineer will instruct the Contractor of location of sample. The Contractor shall ensure samples are tested promptly after sampling.
 4. The Municipal Engineer shall be afforded full access for the inspection and control testing, both at the site of work and at any plant or borrow pit used for the supply of the materials, to determine whether the material being supplied is in accordance to specification.
 5. The Developer's Engineer shall submit approved test results to the Municipal Engineer.

5.2 Design and Construction

5.2.1 General

1. Road and drainage construction will be completed according to the latest revision of the MTI Standard Construction Specifications.
2. In the case of conflict, the development agreement and associated standards will govern over the MTI Standard Construction Specifications.
3. The developer if requested by the Municipality shall submit a drainage study for the development completed by a Professional Engineer. The drainage study shall provide details of the impact the drainage water from the development will have on the drainage system and lands downstream from the development. The study shall outline all remedial works required to be completed by the Developer to provide proper drainage capacities downstream from the development. The Developer shall be responsible for the costs of the drainage study and remedial works required.
4. The developer if requested by the Municipality shall submit a traffic study for the development completed by a Professional Engineer. The traffic study shall provide details of the anticipated traffic generated by the subdivision and shall provide recommendations for upgrades (as required) to meet acceptable

servicing standards. The Developer shall be responsible for the costs of the traffic study and recommended upgrade works as required.

5.2.2 Roads

1. Gravel surface roads shall have a minimum top width of 8.0 metres. (See Appendix C, Drawing 1).
2. Asphalt surface roads shall have a minimum top width of 7.5 metres with minimum 0.75 m gravel shoulders. (See Appendix C, Drawing 2).
3. The road traffic surface width for a residential cul-de-sac shall have a minimum radius of 12.00 metres.
4. The road traffic surface width for an industrial cul-de-sac shall have a minimum radius of 15.00 metres.
5. The minimum road curb radius shall meet or exceed the following:
 - a. Residential (Urban or Rural)
 - i. 7.50 m
 - b. Industrial
 - i. 10.0 m
6. If poor subgrade soil conditions are known prior to construction or are encountered during construction, a geotechnical investigation will be required to determine enhancements recommended to the minimum road cross-section listed below.
7. The minimum road cross-section listed below **and granular material sieve** can be altered based on the recommendation of a Geotechnical Engineer upon completion of a geotechnical investigation and report for the development. The geotechnical report must be provided to the RM prior to approval **and must demonstrate that the performance of the roadway will be equal to or superior as a result of the proposed change.**
8. Road Sections shall consist of a minimum asphalt or concrete (if required), base course and sub base course thickness as indicated:
 - .a Residential (Urban)
 - .i 100 mm Asphalt or 150 mm Concrete
 - .ii 150 mm Base Course
 - .iii 300 mm Sub Base Course
 - .iv Geotextile
 - .b Residential (Rural)
 - .i 150 mm Base Course

- .ii 300 mm Sub Base Course
- .iii Geotextile
- .c Industrial
 - .i 100 mm Asphalt or 150 mm Concrete
 - .ii 200 mm Base Course
 - .iii 200 mm Sub Base Course
 - .iv 300 mm Crushed Concrete
 - .v Geotextile

9. All roads shall be centered within the road allowance.
10. Minimum road cross fall shall be 3.0%.
11. The road right of way shall be cleared and grubbed as required for the construction of the roadways, ditches, and utilities. The minimum width of clearing is the width of the road allowance.
12. Utility locations
13. All topsoil and unsuitable material shall be removed.
14. Waste: Any organics or silty material that has a plasticity index of 20 or less, in accordance with ASTM D4318, with more than 20% of the soil particles passing the No. 200 sieve in accordance with ASTM C136 and CAN/CGSB 8.2 or material found to be in excess or unsuitable by the Engineer.
15. Placement of subgrade shall be compacted, in layers not exceeding 150 mm in compacted thickness, to 95% of Standard Proctor Density at optimum moisture content for the full length and width of the road and side slopes. Compaction shall be completed utilizing equipment suitable for road subgrade construction.
16. Aggregate shall be graded and compacted in lifts not exceeding 150 mm.
17. Sub base course aggregate to be compacted to an average of 98% of Standard Proctor Density with no test less than 96% Standard Proctor Density.
18. Base course aggregate to be compacted to an average of 98% of Standard Proctor Density with no test less than 96% Standard Proctor Density.
19. Asphaltic Concrete to be compacted to an average of 97% of Standard Marshall Density with no test less than 95% Standard Marshall Density.
20. All the road side slopes, ditches and swales and non travelled portions of the right of way shall be sodded or hydro-seeded.
21. At the discretion of the RM, the developer shall prepare a traffic impact study to provide recommendations.

5.2.3 Drainage

1. The Developer shall obtain the necessary license under the Water Rights Act to connect drains and ditches within the development to existing drains external to the development and the Developer shall have obtained approval from all persons or authorities having authority over drainage works that will be affected by the run-off from the development prior to the commencement of any construction of the drainage works.
2. Where required, the developers shall ensure the subdivision design is in accordance with the Manitoba Transportation and Infrastructure requirements.
3. Some of the authorities having authority of drainage works are Water Resources Branch, Department of Fisheries and Oceans Canada, Railways, etc. All drainage works require approval of the Municipality.
4. The municipality may consider requests to upgrade existing municipal ditches if all private property drains flowing into the municipal ditch are licensed by the Water Resources Branch.
5. All swale and ditch easements shall be indicated on the design plans.
6. The design storm frequency for ditches and culverts within the development shall be 20% (5-year return period) unless otherwise specified by the Municipality or approving authority.
7. For new subdivisions, storm water from a 1 in 25-year (1 in 50 years for MTI approval) storm event must be stored on-site and the run-off flow rate must be restricted to pre-construction flow rates for a 1 in 5-year storm event.
8. Drainage plan for the development to be completed by a Professional Engineer.
9. Minimum ditch grades shall be 0.10%.
10. Ditch slopes shall be at a 4:1 slope, minimum 3:1 slope for ditch back slopes.
11. Minimum ditch bottom width shall be 0.6 metres.
12. Excess excavated material shall be hauled to an approved disposal area.

5.2.4 Culverts, Driveways and Approaches

1. All culvert, driveway, and approaches are to be in accordance with the RM of Reynolds Driveway & Culvert Policy (Policy No. 3) and shall be subject to Municipality approval.
2. Municipal Road Crossing and private approach culverts shall be a minimum 300 mm diameter or as determined by flow capacities, whichever is greater. Gauge to be determined by depth of cover, loading and culvert diameter.

3. All culverts shall have a minimum slope of 0.2% or 30-mm drop, whichever is greater, from inlet to outlet. Invert of the culvert to be installed approximately 50 mm below proposed ditch bottom elevation.
4. All culverts shall have a minimum cover of 0.3 m from the surface to the top of the culvert.
5. The length of the culvert shall be sufficient to traverse required road surface width and side slopes. The culvert shall have a minimum length of 14.0 metres for Municipal roads, private approaches to be a minimum length of 7 metres.
6. Bedding to be compacted granular material up to the top of the culvert.
7. Private approach side slopes shall be a minimum of 3:1.
8. Private approach culverts shall be installed so the end of culvert is a minimum 4 m to the nearest property line and minimum 6 m to the nearest roadway intersection property line. Private approaches are to be located such that the curb stops are outside the driveway. If the curb stop is located within the driveway; the builder is responsible for relocating the curb stop and/or is responsible for all restoration costs if the driveway is excavated in the future for service line repair.

5.2.5 Lot Grading

1. All lots shall be graded to provide positive drainage away from the building into a swale or ditch.
2. The lot grading shall also include a minimum of 250 mm of perching around the building so that run-off water is directed away from the house (see Appendix C).
3. Where required swales/ditches will be installed along common property lines to ensure runoff water does not flow from one lot and onto the next lot. Lot drainage shall be self-contained within the subdivision limits.
4. The developer shall be responsible for construction of all swales and ditches within the subdivision including perimeter swales/ditches and swales/ditches along common property lines. Exceptions to this policy will be reviewed by Council based on existing ground slope, trees, etc.
5. Plans to indicate ground elevation at house, at all lot corners and at grade break point of swales.
6. Urban residential yards to be ideally graded between 1.5% and 2.5%.
7. Maximum range of grades for urban residential yards to be 1.0% to 5.0%
8. Rural lots (large lots) to be graded at 2% from house down to existing ground elevation with allowance for perching.
9. Industrial lots (large lots) to be graded at 2% from Building down to existing ground elevation with allowance for perching.

10. Lots to be graded with either back to front or split lot drainage designs. (See Appendix C).

5.2.6 Sidewalks

1. Sidewalks shall be a minimum of 1.5 m in width. At the request of the Municipality, 3.0 m sidewalks will be utilized for active transportation routes.
2. Sidewalks shall be either of the following:
 - a. 75 mm asphalt placed on a minimum of 300 mm of granular material on geotextile.
 - b. 150 mm thick concrete reinforced using 10M bars at 600 mm o/c poured on a minimum of 150 mm of granular material on geotextile.
 - i. Concrete sidewalks shall utilize a transverse joint at maximum horizontal distance of 1.5 m.
3. Sidewalks shall utilize a grade between 2-4%.
4. Sidewalks shall utilize ramp style connection to roads with detectible warning strips.
5. Existing sidewalks damaged as a result of construction activities must be replaced or repaired prior to the commencement of the warranty period.

6.0 REQUIREMENTS FOR STREET LIGHTING

All proposed residential developments shall be equipped with street light as designed and installed by Manitoba Hydro. Street lighting shall be designed in accordance with Illuminating Engineering Society standards and shall be subject to Municipality approval. The Hydro and street lighting plan shall be provided to the RM prior to the construction commencement certificate.

6.1 Approved Materials

6.1.1 Street Lights (Without Overhead Hydro)

1. To be grey LED Cobra Head Luminaire or alternate approved by Municipality.

6.1.2 Street Lights (With Overhead Hydro)

1. To be LED Alley Luminaire or alternate approved by Municipality.

6.2 Street Lighting Requests Policy

Street lighting requests are to be in accordance with the RM of Reynolds Street Lighting Requests Policy (Policy No. 2).

7.0 UTILITIES

The developer shall obtain all required locates of underground utilities prior to any excavation works.

8.0 RESTORATION WORKS

It shall be the Developer's responsible to restore all right of ways to original condition or better. Grass restoration works shall be completed utilizing minimum 50 mm thick topsoil and hydro-seed. The Developer shall maintain and adequately water all grassed areas until growth is deemed acceptable by the Municipality.

9.0 REQUIREMENTS FOR SUBDIVISION PLANS AND CONSTRUCTION

This document provides a guide for minimum requirements for submitting design(s), plans and specifications to the Municipality.

- .1 All engineering plans and specifications shall be designed, prepared, stamped, and signed by a qualified professional engineer registered in the Province of Manitoba.
- .2 The developer shall provide the Municipality with one hard copy and one electronic copy of the legal plan for the development, which is entered and registered in the Winnipeg Land Titles Office, before construction commences.
- .3 The developer shall provide the Municipality with one hard copy and one electronic copy of the design plans and specifications. The development plans, as a minimum, shall bear the information outlined below.
- .4 The developer shall provide the Municipality with copies of approvals from any agency having jurisdiction and applicable approval authority i.e. Manitoba Transportation and Infrastructure, Department of Fisheries and Oceans Canada, Manitoba Environment and Climate Change, Office of Drinking Water, etc.
- .5 Plans shall be drawn on standard 24" x 36" sheets.
- .6 Stationing shall be included on the plan view as well as the profile for all roads, water, and sewer plans.
- .7 General plans shall include the following:
 - a. Topography of area.
 - b. An established geodetic benchmark, location, and elevation.
 - c. An established temporary geodetic benchmark, location, and elevation at the construction site.
 - d. Key plan, land location, road names.
 - e. Identification of physical features i.e. major drains, major roads, etc.
 - f. Test hole logs if applicable.
- .8 Drainage plans shall include the following:
 - a. Existing topography of the subdivision, surrounding area, and drainage ditch elevations.
 - b. Contours at 100 mm intervals
 - c. Existing and proposed drainage routing within and surrounding the subdivision.
 - d. All proposed and existing culvert elevations and sizes.
 - e. Typical drainage ditch and swale cross-section, slope, and elevation.
 - f. Location of easements, if required, to accommodate ditches/swales on private property.
 - g. Expected capacity surface run-off discharging into the ditches and culvert flow capacity.

- h. Drainage of lots and proposed ground level at buildings.
- .9 Road plans shall include the following:
- a. Typical road cross section to include:
 - i. Gravel thickness, class, and compaction requirements.
 - ii. Subbase construction method.
 - iii. Traffic surface, shoulder width, side slopes, ditch bottom width, road slope (cross fall).
 - b. Plan/profile for road and drainage.
 - c. Road alignment within right of way.
 - d. Road grades and elevations at changes of grade.
 - e. Cul-de-sac turn around dimensions and offset.
- .10 Sewer System plans shall include the following:
- a. Identify lift station location, depth, invert elevations, pump stop and start elevations.
 - b. Invert elevation of existing pipe at connections.
 - c. Plan/profile of low-pressure sewer piping.
 - d. Sewermain pipe sizes, invert elevations, grades, valve locations, clean-out locations, and offset dimensions.
 - e. Sewer service line location and invert elevation at termination for all proposed lots.
- .11 Water System plans shall include the following:
- a. Invert elevation of existing pipe at connections.
 - b. Plan/profile of watermain piping.
 - c. Watermain pipe sizes, invert elevations, grades, valve locations, fire hydrant locations, and offset dimensions.
 - d. Water service line location and invert elevation at termination for all proposed lots
- .12 LDS System plans shall include the following:
- a. Invert elevation of existing manholes and pipe inverts at connections.
 - b. Plan/profile of LDS piping.
 - c. LDS mainline sizes, invert elevations, grades, manhole locations, catch basin locations, and offset dimensions.
- .13 Plan review
- a. The Developer shall submit to the Municipality, an electronic copy of the design plans stamped "preliminary", for all works required as outlined in the development agreement.
 - b. Upon review by the Municipality, the Developer shall respond to the written requests of the Municipality detailing the required revisions. The Developer shall address all required

revisions indicated for the plans. All plans shall then be sealed by a Professional Engineer and resubmitted to the Municipality for approval.

- c. The Municipality shall review all the sealed plans to ensure all previous revision requests have been properly addressed and to check if additional revisions are needed.
- d. If the submitted sealed plans require further revisions the Developer shall have the plans revised according to the written request of the Municipality. All the sealed plans will then be resubmitted to the Municipality and shall have the proper revision number indicated on the plans.
- e. Once all revision requests from the Municipality have been properly addressed and approved, the Municipality shall notify the Developer that all the plans have been approved.

.14 Specification Review

- a. The Developer shall submit to the Municipality, one electronic copy of the tender and specification document for review.
- b. Upon review by the Municipality the Developer shall respond to the written requests of the Municipality detailing the required revisions. Once the Developer has completed all the revisions as requested by the Municipality, the Developer shall resubmit the tender and specification document for review.
- c. Upon review by the Municipality to determine if all revisions have been completed and if no additional revisions are required, written approval shall be submitted to the Developer indicating the tender and specification documents are accepted. If during the second review or any subsequent review, additional revisions are requested by the Municipality, the Developer shall abide by each revision request and resubmit the tender and specification document to the Municipality. This process shall continue until the Municipality provides the Developer with written approval that the Municipality has accepted the tender and specification document.
- d. Upon receipt of written approval, the Developer shall submit to the Municipality one electronic copy of the tender and specification document that have been sealed by a Professional Engineer.

.15 Construction

- a. No construction shall start before all plans and the specification have been approved by the Municipality and the construction commencement certificate (included in Appendix A) has been signed
- b. Prior to the start of construction works, if requested by the Municipality, an onsite meeting between the Developer and their representatives including the Contractor(s) and Engineer(s) and the Municipality and its representatives shall be arranged. The meeting

will be used to determine the construction schedule/sequence and outline inspection procedures that will be implemented.

- c. Prior to the start of construction, the Developer's Engineer shall stake project works required for location and elevation.
- d. The Developer's Engineer shall be responsible for the layout and inspection of all services to ensure conformance with the approved detailed drawings, plans and specifications. The Developer's Engineer or their authorized representative shall have a presence on site at critical or sensitive times during the installation of improvements.
- e. The Developer's Engineer shall record all as-built grades, elevations, dimensions, and locations of all works performed by the Developer's Contractor. Any changes to the plans as a result of the recorded as-built information shall be recorded for the completion of as-built plans.
- f. During the course of construction any damaged or destroyed survey monuments shall be replaced prior to final acceptance of work. According to the Canada Land Surveys Act the person who damages or destroys a survey monument is liable for payment of all cost in connection with the restoration or re-establishment of the monument(s) by a surveyor under instruction from the Surveyor General.
- g. If the Developer's Engineer is not performing the above in a satisfactory manner, as determined by the Municipality, the Municipality will utilize its Engineer to provide all works as deemed necessary. All such works shall be charged to the developer's letter of credit.
- h. The Developer shall appoint an accredited material testing firm to carry out quality control and testing to ensure that construction is in accordance with the approved design. It shall be the responsibility of the Developer to provide material testing services during construction to ensure compliance with standards. The Developer's Engineer shall review all test results immediately once they become available. Where testing indicates that the required standards have not been met, the deficient areas shall be re-worked and subsequently re-tested on either side of the failed test until the standards have been met. A copy of all test results will be forwarded to the Municipality and the Municipal Engineer as soon as the developer's Engineer receives them.

.16 Proposed onsite construction administration procedure includes:

- a. Inspection schedule.
- b. Staking procedures.
- c. For roads and drainage - testing of subbase, base, granular material, and grades.
- d. For sewer - invert elevations and location of all valves and clean-outs, service line saddles and ends of services lines at the property lines.

- e. For water - invert elevations and locations of all fire hydrants and valves, service line saddles and ends of service lines at the property lines.
- f. For LDS - invert elevations and locations of all manholes and catch basins.

.17 Construction Completion Certificate.

- a. Upon substantial completion of
 - i. Roads and drainage.
 - ii. Sewer system and water system.
- b. The Developer's Engineer shall submit one hard copy and an electronic copy of the "As Built" plans to the RM for review prior to application for the Construction Completion Certificate. The Developer's Engineer shall also provide the "As-Built plans" in AutoCAD format.
- c. The developer must submit the following as-built infrastructure data to the Municipality for their Asset Management Inventory.
 - i. Georeferenced shapefiles of the new infrastructure projected in UTM83-14 (26914), LL83, or LL84.
 - ii. Asset attribute tables of the new infrastructure within the attribute table of the shapefile, or in an excel file with an ID that matches the ID in the shapefile.
 - iii. Refer to Appendix D for attribute table requirements.
- d. The Developer shall apply for a Construction Completion Certificate which, when approved by the Municipality, will initiate the maintenance period of the completed project. Any and all deficiencies shall be corrected by the Developer during the maintenance period.

.18 Final Acceptance Certificate.

- a. The Developer may apply for a Final Acceptance Certificate up to 60 days prior to the maintenance expiration date indicated on the Construction Completion Certificate. The maintenance period shall be one year from the date of initiation of the Construction Completion Certificate. The Developer shall repair or make good all deficiencies found in the works prior to the expiration date indicated on the Construction Completion Certificate.
- b. The Municipality will assume responsibility of the facility after approval of the Final Acceptance Certificate.

10.0 LETTER OF CREDIT

As indicated in the Development Agreement the developer shall provide to the Municipality an Irrevocable Letter of Credit covering the labour and material for all of the services to be installed by the developer pursuant to the development agreement. The value of the letter of credit shall be determined by the Municipality. The value of the letter of credit shall be in a form approved by the Municipality and shall be provided prior to the commencement of any constructions works with in the development area as outlined in the development agreement. The value of the letter of credit as determined by the RM shall stay in effect until final acceptance of the construction works has been certified. A progressive release of the letter of credit based on work completed may be provided by the Municipality if requested.

11.0 APPROVALS

1. Prior to the construction of a new or alteration of an existing wastewater (sewer) collection system or waterdistribution system including the construction, modification, upgrading or extension of sewer collection systems or water distribution systems, forcemains, and lift stations the Developer shall obtain a permit from the Office of Drinking Water and/or Environment and Climate Change providing approval and forward the approval permit to the Municipality.
2. Where applicable, obtain the necessary approvals for all works being completed within a railway or highway allowance.

12.0 MATERIAL TESTING

Testing of the road material shall at a minimum be done to the following requirements. Copies of all test results are to be forwarded to the Municipality and their Engineer within three days of receipt of the test results. The RM shall be notified 48 hours in advance of any testing and RM or RM's representative shall be present during all material testing. Testing cannot be scheduled on weekends or holidays. The tests shall be in accordance with the latest revision of the MTI Standard Construction Specifications as well as the following:

12.1 Road Subgrade Material

- .1 Complete proof roll or proctor density testing on all road subgrade materials.
 - a. Proctor Density Testing:
 - i. Complete proctor density testing of all types of subgrade materials and provide acceptable representative gradation results and densities from a certified lab as approved by Engineer.
 - ii. Provide standard density testing with nuclear densometer of the road subgrade at a minimum of 50 metre intervals and staggered across road surface.
 - iii. Stagger tests across the road surface to provide coverage across the full width of the construction area.
 - b. Proof Roll Testing:
 - i. Complete Proof Rolling as an incidental when directed by Engineer.
 - ii. For proof rolling use a heavy (15-16 tonne) rubber-tired roller with four wheels abreast on independent axles and wheel pressures (550 kPa to 1030 kPa) or a heavily loaded truck to approximately 10 tonnes per axle and minimum tire pressure of 550 kPa.
 - iii. Ground speed to be a maximum of 8 km/hour. Recommended speed is 4 km/hour.
 - iv. Accomplish proof rolling by two complete coverage of the area with proof rolling equipment in one direction and a second series made at right angles to the first direction, if possible. One coverage means every point of the proof rolled surface has been subjected to the tire pressure of the loaded wheel.
 - v. Any area of soft, rutted, or displaced materials shall be re-compacted with additional fill or the existing material removed and replaced with the soil material as specified by the Engineer or properly moisture conditioned as necessary.

- vi. For new construction, permanent rutting in excess of 25 mm should be considered failure. In addition, elastic (rebound) movement or rutting in excess of 25 mm with substantial cracking or substantial lateral movement should be considered failure.

12.2 Granular Material

- .1 Complete sieve analysis and proctor density testing of all types of granular materials and provide acceptable representative gradation results and densities from a certified lab as approved by Engineer.
- .2 Provide standard density testing with nuclear densometer of the road sub base course at a minimum of 50 metre intervals and staggered across road surface.
- .3 Provide standard density testing with nuclear densometer of the road base course at a minimum of 50 metre intervals and staggered across road surface.
- .4 Provide additional testing as deemed necessary by the Engineer to verify quality control is being maintained.
- .5 Stagger tests across the road surface to provide coverage across the full width of the construction area.

12.3 Asphalt Material

- .1 One test will be taken for each 500 tonnes or portion thereof of asphalt placed on day of operation.
- .2 One "test" consists of an asphalt marshal analysis that is to include forming three briquettes, unit weight, stability, flow, A/C content, sieve analysis, maximum Theoretical specific gravity for void analysis
- .3 Provide standard density testing with nuclear densometer of the asphalt at a minimum of 50 metre intervals and staggered across road surface and take one core sample every 200 m of road.

12.4 Concrete Material

- .1 Concrete sampling and inspection are to be by the Contractor. Testing of cylinders for each pour is to be performed by an independent inspection agency that is CSA approved.
- .2 One test will be taken for each individual placing operation that exceeds 7.5 m³ or at least one test for each 40 m³ of concrete placed on day of operation.
- .3 One "test" consists of a slump test, air content test (for air entrained concrete) and compressive strength tests on three lab cured cylinders (one for 7-day break and two for 28-day breaks).

- .4 Two additional site cured cylinders will be taken during cold weather concreting and be cured on job site under the same conditions as concrete it represents.

13.0 CONTRACT ADMINISTRATION

The Developer shall provide the Municipality five days notice prior to commencement of any construction work in the development.

The Developer shall file a copy of all “Record Drawing/As Built” plans with the Municipality for their review. Final “Record Drawing/As Built” plans shall be forwarded to the Municipality prior to transfer of ownership of services and property.

The Developer’s Contract Administrator shall meet the minimum requirements listed below but shall not be limited to the following.

13.1 Underground Piping Works

The Developer’s Engineer shall provide Resident Administration on a full-time basis during the installation of all underground piping. At a minimum the resident administrator shall record the elevation and location of all pipes at all fittings, valves, appurtenances and pipe ends. Daily and weekly records of works completed shall be provided to the Municipality.

In addition, the Developer’s Resident Administrator shall witness the pressure testing of the piping to ensure that specification requirements are met. A copy of all records of the pressure test and disinfection test of watermains shall be provided to the Municipality.

13.2 Road and Drainage Works

The Developer’s Engineer shall provide Resident Administration during the construction of the road(s), sidewalk(s) and drainage to ensure all testing requirements outlined in Section 9 are adhered to and specification requirements are met. The Resident Administrator shall be onsite on a full-time basis for concrete and asphalt works and at the discretion of the Developer’s Engineer, shall provide spot checks for subgrade and granular works. In addition, the elevation of the road subgrade, sub base course, base course, asphalt, gutter and drainage (cross-section) shall be recorded at minimum 10 m intervals and provided to the Municipality. A copy of all records of these tests and elevations shall be provided to the Municipality.

A summary of all weigh tickets for the granular and asphalt materials shall be provided to the Municipality if requested.

14.0 EASEMENTS

Any and all easements required for the development shall be legally registered prior to the sale of any lot(s) within the development area.

Appendix A



RURAL MUNICIPALITY OF REYNOLDS

CERTIFICATE OF COMMENCEMENT

DEVELOPMENT LOCATION: _____

DEVELOPMENT NAME: _____

DEVELOPER: _____

Take notice that the Development Agreement made between the Rural Municipality of Reynolds as governing body and _____ as Developer, dated ____ day of _____, 20__, in respect to required actions preceding commencement of construction as outlined in the Development Agreement have been completed to the satisfaction of the Rural Municipality of Reynolds on the ____ day of _____, 20__, for the lands legally described in the Certificate of Title No. _____.

The following is a short description of the actions:

The Developer agrees to follow all requirements of the development agreement and schedule all required inspections at the Developers cost.

The undersigned hereby certify the above information is correct and that they are persons required or authorized to give this notice.

DEVELOPER Date: _____

CHIEF ADMINISTRATIVE OFFICER Date: _____



RURAL MUNICIPALITY OF REYNOLDS

CONSTRUCTION COMPLETION CERTIFICATE

DEVELOPMENT LOCATION: _____

DEVELOPMENT NAME: _____

DEVELOPER: _____

CONTRACTOR: _____

SERVICES INSTALLED: _____

I _____

of the firm _____

hereby certify that the services noted herein are complete as defined by the Servicing Agreement for the above mentioned Development and constructed according to the RM of Reynolds Municipal Standards. Copies of "As-Constructed" Plans and Designs and all test records for the above mentioned Services have been submitted to the RM of Reynolds. I hereby recommend these Services for approval of this Construction Completion Certificate. Minor deficiencies indicated on the attached list shall be corrected as soon as possible and no later than

_____.

_____ Date: _____

DEVELOPERS ENGINEER

APPROVAL:

_____ Date: _____

MUNICIPAL ENGINEER

_____ Date: _____

RM OF REYNOLDS

DATE Maintenance Period to Start: _____

DATE Maintenance Period to Expire _____

Appendix B

Appendix C

Appendix D

AS-BUILT INFRASTRUCTURE DATA SUBMISSION REQUIREMENTS

The developer must submit the following as-built infrastructure data to the Municipality for their Asset Management Inventory.

- Georeferenced shapefiles of the new infrastructure projected in UTM83-14 (26914), LL83, or LL84.
- Asset attribute tables of the new infrastructure within the attribute table of the shapefile, or in an excel file with an ID that matches the ID in the shape file.

REQUIRED INFRASTRUCTURE AND ATTRIBUTE CLASSIFICATION (1-5)

1) CULVERTS

Segment: Individual Culverts
Code ID: C#
Size: Diameter of Culvert (mm)
Material: Material of Culvert (Metal, Concrete, Plastic, Etc.)
Length: Length of Culvert (m)
Flood Gate: If Flood Gate and Type (Engineered/Made)
Location: GPS UTM Northing/Easting of inverts
Elevation: GPS UTM Elevation average of inverts
Year Acquired: Year culvert installed
Useful Life: Estimated useful life
\$/m: Culvert cost per meter length – Estimate from “Cost Table”
Flood Gate \$: Cost of Flood Gate - Estimate from “Cost Table”
Total Culvert \$: Culvert \$ + Flood Gate
Construction \$: Estimated cost of equipment, labour and other materials for install
Physical Condition: 0-5
1: “New”, Zero defects
2: Slight rust or minor damage
3: Rusted with small bends or visible damage
4: Completely rusted, holes close to failure
5: Collapsed or Needs to be replaced
Functional Condition: 0-5
1: Completely open and clear
2: 10% or less drainage path blocked
3: 10% - 50% drainage path blocked
4: More than 50% drainage path blocked but can be cleaned
5: Collapsed or Needs to be replaced
Demand Condition: 0-5
1: Crossing is necessary, Culvert is one size larger than adjacent drainage
2: Crossing is necessary, Culvert matches adjacent drainage
3: Crossing may not be necessary, Culvert matches adjacent drainage
4: Crossing may not be necessary, Culvert less than adjacent drainage
5: Crossing and culvert is not necessary should be removed

2) SIDEWALKS

Segment: Straight Sidewalk length from intersection to intersection termination

Code ID: SDW#

Material: Material (Concrete, Asphalt)

Length: Length of Segment (m)

Width: Width of sidewalk surface

Depth: Depth of sidewalk surface material

Location: GPS UTM Northing/Easting of each segment end

Year Acquired: Estimated year constructed

Useful Life: Estimated useful life

\$/m: Construction Cost of Equipment, Labour and Materials for construction per meter length - Estimate from "Cost Table"

Total Sidewalk \$: Total Sidewalk Cost (\$/m) x (Length)

Physical Condition: 0-5

- 1: "New", Zero defects
- 2: Slight breaks or cracks
- 3: Slight breaks or cracks with slight heaving
- 4: Consistent breaks, cracks and heaving
- 5: Crumbling with no original surface material, needs to be replaced

Functional Condition: 0-5

- 1: Completely accessible and clear
- 2: 10% or less path blocked by vegetation/landscaping
- 3: 10% - 50% path blocked by vegetation/landscaping
- 4: More than 50% path blocked by vegetation/landscaping
- 5: Completely blocked and inaccessible

Demand Condition: 0-5

- 1: Used regularly, considered main route
- 3: Used periodically, considered secondary route
- 5: Not used, consider for removal

3) SIGNS

Segment: Each individual sign point

Code ID: SIGN#

Type: Purpose of sign (Road Name, Traffic Control, Informational)

Label (If Traffic Control): Type of traffic control sign

Label Name: Text of what is actually on sign

Sign Material: Type and colour of sign

Post Material: Material of post sign is on

Location: GPS UTM Northing/Easting of sign point

Year Acquired: Estimated year installed

Useful Life: Estimated useful life

Sign Cost: Cost of Sign

Post Cost: Cost of Post with any required sign brackets

Install Cost: Estimated Cost of Sign

Physical Condition: 0-5

1: "New", Zero defects

3: Slight damage or falling, can be repaired

5: Completely damaged, can't be repaired

Functional Condition: 0-5

1: Sign is easily understood and location/placement is good.

3: Sign is somewhat clear/ location is ok (could be moved in future)

5: Sign cannot be understood and/or location is poor.

Demand Condition: 0-5

1: Sign is necessary for traffic

3: Sign is not necessary for traffic but provides information

5: Sign is not necessary and/or is redundant

4) ROADS

Segment: Each mile road or termination at intersection

Code ID: RD#

Name: Road Name (Between other roads)

Material: Surface material of road

Type/Class: Designated road type (Rural 1st Priority, Urban 2nd Priority, ect.)

Location: Description of each segment end

Regular Maintenance Cost: Cost of maintenance gravel put on road

Length: Length of road segment (m)

Width: Width of road surface (m)

Year Acquired: Estimated year constructed

Useful Life: Estimated useful life

Material \$/m²: Material cost per square meter

Total Road \$: (Material \$/m² + Construction \$/m²) X (Width X Length)

Physical Condition: 0-5

- 1: "New", Free of defects, only planned maintenance required
- 2: Minor defects, increasing maintenance required
- 3: Defects requiring regular significant maintenance
- 4: Significant defects, high order cost intervention likely
- 5: Physically beyond rehabilitation, immediate renewal action required

Functional Condition: 0-5

- 1: The base/material construction exceeds the type/class of road
- 2: The base/material construction matches the type/class of road
- 3: The base/material construction is slightly less than the type/class of road
- 4: The base/material construction is lower than the type/class of road
- 5: The base/material construction much lower than the type/class of road and should be addressed

Demand Condition: 0-5

- 1: The length and width exceeds the type/class of road
- 2: The length and width matches the type/class of road
- 3: The length and width is slightly less than the type/class of road
- 4: The length and width is lower than the type/class of road
- 5: The length and width is much lower than the type/class of road and should be addressed

5) WATER & SEWER LINES

Segment: Each line segment intersection to intersection. Each individual appurtenance.

Code ID: SL# or WL#

Type: Type of asset (Line, Valve, Hydrant, Saddle, curb stop ect.)

Material: Material of asset

Length: Length of segment (m) or (1) if appurtenance

Size: Diameter or other notable measurement (mm)

Location: GPS UTM Northing/Easting of each segment end or center of appurtenance

Year Acquired: Year constructed

Useful Life: Estimated useful life

Unit Cost \$/m: Line/appurtenance cost per meter length

Total Cost\$: (Material \$/m + Construction \$/m) X (Length)

Physical Condition: 0-5

- 1: "New", Free of defects, only planned maintenance required
- 2: Minor defects, increasing maintenance required
- 3: Defects requiring regular significant maintenance
- 4: Significant defects, high order cost intervention likely
- 5: Physically beyond rehabilitation, immediate renewal action required

Functional Condition: 0-5

- 1: Size or function exceeds required adjacent demand
- 3: Size or function meets required adjacent demand
- 5: Size or function is too small for required adjacent demand

Demand Condition: 0-5

- 1: Optional, can act as a backup
- 2: Necessary, no backup
- 5: Not used and could be removed