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**1. GENERAL**

The Contractor shall be a licensed Sanitary Sewer Contractor. The Contractor shall be responsible for delegation and coordinating the work of all trades and subcontractors and supply of all materials that shall produce a complete and operating job. The scope of any Section shall not necessarily be the limits of a subcontract or trade, and the Engineer shall not be the arbiter to establish limits of contracts between Contractor and subcontractor.

The Contractor shall be responsible for ensuring that all subcontractors and suppliers are familiar with the codes, bylaws, specifications and other regulations governing their work. The Contractor shall examine all drawings before beginning the work and report to the Engineer any discrepancies or interferences. The contractor shall coordinate all work to provide minimum interference and maximum useable space in accordance with manufactures recommendations for safety, access and maintenance.

**2. PROJECT CONTACT**

Inquiries regarding all aspects of the project shall be directed to:

Rabindra Bhowmik, C. Tech.  
Engineering Technologist

Phone: (306) 694-4525  
Email: [rbhowmik@moosejaw.ca](mailto:rbhowmik@moosejaw.ca)

Throughout the specification the Engineer will refer to either Colin, Manager of Engineering Services or Rabindra

**3. HOURS OF WORK**

The Contractor shall limit the work under this contract to the hours between 7:00 a.m. and 10:00 p.m. on non-statutory weekdays and between the hours 9:00 a.m. and 10:00 p.m. on Sundays and Statutory holidays. The hours of work may only be extended with written approval from the Manager of Engineering.

**4. DESCRIPTION OF THE WORK**

Work under this contract consists of installation of a 600 mm trunk sanitary sewer line North of Home Street West near Thunder Creek. All construction will be completed in accordance with the contract documents.

Specific work under this contract includes:

- Installation of 600mm Trunk Sewer Line near Thunder Creek and abandon sewer.
- Replacement of the upstream manhole (MH14943) at west end of the 600 mm proposed sanitary sewer line.

- Restoration of all disturbed surfaces and affected gravel pathway.

The work shall be considered complete when all requirements are met and the work has been inspected and approved by the City Engineer or his designate.

**5. TRAFFIC CONTROL AND PUBLIC SAFETY**

The Contractor is responsible for public safety within and abutting the project limits. If the contractor's equipment will affect active traffic lanes then the Contractor is responsible to provide qualified flag persons. The Contractor will supply and install all signs, signals, overnight fencing, and barricades to ensure the safety of the public. The Contractor will be responsible for properly barricading and maintaining the project site.

The cost of all signs, and labour, shall be included in the bid price of any other item and no separate payments will be made.

**6. PRE-CONSTRUCTION MEETING**

Upon award of the Contract, the Engineer will contact the successful bidder to arrange a pre-construction meeting.

The pre-construction meeting will be used to review the Contractor's plans for construction staging, setting milestones, scheduling, force account, by pass set up, and safety. All roads, walkways or sidewalks closures require the approval of the engineer, and as such, the Contractor may need to modify their schedule according to the directions provided.

**7. COMMUNICATION**

It is the responsibility of the Contractor to ensure that a list of contact numbers of all supervisory staff is provided at the pre-construction meeting. The Contractor shall keep the Fire Department, Police Department, Transit System and Ambulance Service posted on road and hydrant closures.

**8. SITE INSPECTION**

Bidders are recommended to examine the site prior to submitting a bid. All bidders must comply with the current requirements of the Occupational Health and Safety Act and regulations prior to access of the manholes for site inspections and/or any work under the terms of this contract.

**9. CONSTRUCTION SCHEDULES AND COMPLETION**

At least 3 days prior to commencement of the work, the Contractor is responsible for preparing and submitting the construction schedule for this project in the form of a chart divided into weekly divisions, showing the commencement date and completion of all principal phases of work. The

Engineer reserves the right to schedule construction meetings to review the progress of the work and the contractor's schedule. Sequence and correlation of work, together with an estimated time required for delivery of all materials shall be provided.

The Contractor shall update the Construction Schedule biweekly and a copy to be submitted to the Engineer. If, in the opinion of the Engineer, any Construction Schedule is inadequate as a control tool or if it does not show the work being fully completed by the Contract Completion date, the Engineer may reject it until one is acceptable. The Contractor shall execute the work in such a manner as to complete it on or before **July 31, 2017**. The successful bidder shall supply all equipment, labour and materials to ensure that the completion dates are met.

**10. DOCUMENTS REQUIRED**

Maintain at least one copy at the job site at all times:

- Contract drawings
- Specifications
- Addenda
- Reviewed shop drawings
- Change orders
- Modifications to contract
- Copy of approved schedule

**11. PRIVATE / ADJACENT LANDS**

The Contractor shall not enter on or occupy any private lands without the owners written consent. Any alterations or damage to private lands shall be restored to original condition or better at the expense of the Contractor. The project limits will be marked out or discussed by the Engineer's representative prior to work beginning. Any damages/ stoppage in work caused by working outside the project limits will be solely at the cost of the contractor.

**12. USE OF SITE**

The Contractor shall have full use of the site, provided that the Contractor permits access to the City and testing firms for purposes of inspections, reviews, tests, and carrying out related work. The contractor shall return the site in a clean state, free of all materials and construction debris. Protect all trees, plants, fences and other items from damage during construction.

**13. STAGING / STORAGE**

The City will allow the contractor to deliver, store, and maintain packaged material and product with manufactures seals and labels intact at the project site. Staging of equipment and material stock piling, and drying will also be allowed near the City Yards (1000 block High Street West).

**14. EXISTING UTILITIES AND STRUCTURES**

The Contractor shall be responsible for existing utilities and structures including the following: pipes, culverts, ditches or other items which are part of an existing sewerage, drainage or water system; or which are a part of a gas, electrical, telephone, television, telecommunications or other utility system. Also included are streets, sidewalks, curbs, gutters, swales, poles, fences or any other structure encountered during construction.

The City of Moose Jaw has reviewed the site and surveyed inverts, valves and reviewed as-built data. The drawings presented are result of this work; however, some discrepancies may still exist. The Contractor shall be responsible for locating all utilities. The Contractor shall pay all costs, be responsible for establishing locations, and state the use of all existing utilities that may affect the work.

**15. SAFETY PROGRAM**

The Contractor shall provide, and shall ensure that all subcontractors provide, safe working conditions including proper sanitation and ventilation for all their respective employees. The program shall fully respond to the requirements of applicable laws, ordinances, rules, regulations, orders, and general construction practices for safety. The Contractor shall comply with the Occupational Health and Safety Act, R.S.A, Chapter 0-2, as amended and regulations here under (the “Act”).

Contractor must submit Safe Trenching and excavating code of practice, fall protection, Confined Space, rigging and relevant safe work practice (SWP’s) training certificate for their workers before start the work.

**16. WEATHER DELAY**

The Contractor should anticipate that rain delay will occur based on typical weather experienced and no extension will be given to compensate for rain days (greater than 5 mm precipitation) experienced below the historical average, as determined by the Project Engineer. The historical number of rain days in any given month may be rounded up to the next whole day. Extensions to the project completion date may be granted if the number of rain days in any given month is greater than the historical number of rain days. The precipitation data available at: <http://climate.weatheroffice.gc.ca/> under “Climate Normal and Averages”.

**17. POWERED MOBILE EQUIPMENT (PME) TRAINING REQUIREMENTS**

Occupational Health and Safety Legislation requires that only trained and competent operators are required or permitted to operate PME. Training must meet the specific requirements under Table 14.1, and be provided by a competent person(s) and that a written record of all training delivered to workers is kept readily available. Contractors will be required to produce written documentation prior to commencing work that they, and/or their operators, have been trained and are competent within the meaning of Section 154 of the Occupational Health & Safety Regulations.

**18. PRIME CONTRACTOR**

The Contractor is the “Prime Contractor”, and the Work of this Contract is to have primary responsibility for the safety of all the workers and the equipment. The City does not anticipate that there will be any contractors, other than those performing the Work of this Contract engaged in work at the “work site” during the performance of the Work of this Contract.

**19. INSPECTION AND TESTING, SAND, GRANULAR BASE, SOIL DENSITY**

To ensure the quality control Independent Testing Agencies will be engaged by Owner for purpose of soil density, sand, granular base, and concrete testing.

Visual Inspection and T.V. Inspection: Inspection of the installed sewer shall be done by 3<sup>rd</sup> party to identify installation/material defects. Any defects found in inspection to be rectified at the Contractor’s cost. The Contractor shall completely wet the sewer with clean water to fill any sags prior to inspection. The Contractor has to make the installed pipe available for CCTV inspection after installation of the sewer line and notice the Engineer at least five days ahead of the date.

Cost of such services will be borne by Owner. The contractor only needs to provide access to the site.

**20. CONTROL OF SURFACE AND SUBSURFACE WATER**

The contractor is responsible for the control and diversion of all water, including but not limited to, surface precipitation, snow, rain, ground water, seepage water from creek, leaking infrastructure, etc. during construction. The Contractor shall include the cost of control of all water within the sanitary trunk sewer supply and include in the bid price. No separate payment will be made for this item.

**21. SURVEYING**

The City will supply initial construction lay out. The contractor is responsible to maintain these points and transfer line and grade.

**22. FORCE ACCOUNTS OR EXTRAS**

All Force Account work shall be authorized prior to beginning work. All force account items must be approved by the Engineer. The Force Account sheets will be signed by the Engineer and contractor the day of the work. The Force Account sheet shall indicate the equipment used, name of each worker, starting and finishing time and unit costs.

Force Accounts with dollar extensions are to be submitted by the Contractor within two (2) weeks after the work is completed. Payment will be made on the following progress estimate. Force Accounts submitted without preapproval will not be accepted for payment. The City's inspector will also state in his daily report for that day if there were any extras for that day.

**23. ON-SITE SANITARY FACILITIES**

The Contractor shall provide on the site, self-contained chemical toilets for use by the Contractor's staff and civic personnel. There will be no separate measurement or payment for this provision as it will be considered incidental to the work. It shall be maintained in a sanitary condition at all times.

**24. NOTIFICATIONS**

The Contractor shall provide written notice, approved by the Engineer, to all adjacent property owners 48 hours before construction commences. This notice shall include information on access, project schedule; and sewer service interruption details, parking restrictions, detour, Contractor Superintendent's name and phone number (including 24 hour emergency numbers).

**25. MOBILIZATION AND DEMOBILIZATION**

Costs incurred which are fixed costs occurring at the beginning and end of the Contract shall be paid under Mobilization and Demobilization. Included in mobilization are such items as bonding, insurance, permits, moving, personnel, materials and equipment to the site, setting up washroom facilities and all preparation for performing the work. Included in demobilization are preparation and submission of operation and maintenance manual. Removal of all personnel, materials, and equipment; and clean up of the site and work. The Contractor shall demobilize his equipment and construction facilities in an orderly and expeditious manner. 60% of the amount tendered will be included in the first progress payment certificate. The remaining 40% will be included in the final progress payment certificate.

**26. TEMPORARY SEWER FLOW SETUP/ BYPASS INSTALLATION**

The Contractor is responsible for making the necessary arrangements for the uninterrupted sanitary sewer supply to the suitable manhole through a bypass system. It shall be the Contractor's responsibility to make all arrangements for the bypass installation, operation, and removal of this system. Any consequences of the sanitary sewer like spillage, leakage and any environmental issues are the responsibility of the contractor until the project is handed over to the City.

There will be no measurement or payment for the temporary sanitary bypass setup and maintenance.

**27. ABANDONED SEWER & MANHOLE**

This item shall govern the abandonment of the sanitary sewer. The Contractor shall provide a permanently plug of 30mpa concrete for at least 1.5 linier metres on both ends of the abandoned sewer. MH14943 to be demolished and concrete to be hauled to the City Yard. MH13230 shall be abandoned. The frame & cover and barrel at least to 1.0m depth shall be removed. The manhole shall be filled up with dirt up to the existing ground level. Restoration shall be done by 100mm top soil and custom blended grass seed as specified in the following item.

Price to be included all capping by concrete, materials, demolishing the existing MH14943 & dirt filled up the MH13230; landscape etc.

**28. TRENCH EXCAVATION**

The Contractor shall provide a safe trench. Contractor must follow safe trenching practices maintained by bracing or sheet piling or properly sloped walls for the soil conditions. The Contractor shall follow all Saskatchewan Occupational Health and Safety Regulations including trench excavations based on the actual soil conditions encountered. Excavated and stockpiled materials must be kept a safe distance (minimum 1.0 metre) away from the edge of trench as directed by the Engineer. Keep excavations as dry as possible while work is in progress. Protect open excavations against flooding and damage due to surface run-off. Dispose of surplus and unsuitable excavated material off site. The contractor shall restore the site including damaged area with 100mm top soil on top layer and custom blended grass seed like – 30% Canada Bluegrass, 25% Creeping Red Fescue, Boreal, 20% Perennial Ryegrass, and 25% Crested Wheatgrass, Fairway.

The Contractor shall include all costs associated with trenching such as excavation, caging/shoring, earth stockpiling, trench bottom preparation, compaction, separation/removal and disposal of materials within the sanitary sewer construction at excavation, backfilling, landscaping with top soil and grass seed etc. Measurement and payment excavation will be at the contract unit price per linier metre.

**29. BEDDING MATERIAL/SAND**

Provide bedding sand/material having the following gradation limits:

<b>SIEVE SIZE PERCENT PASSING</b>	<b>SIEVE SIZE PERCENT PASSING</b>
10 mm 100	10 mm 100
5 mm 95-100	5 mm 95-100
630 µm 25-60	630 µm 25-60
80 µm 0-5	80 µm 0-5

\*Do not supply or place any material until a sieve analysis has been submitted to and approved by the Engineer.

Bedding sand must be placed as per attached (Appendix B, S-20 drawing). Pipe bed (below pipe) must be maintained minimum 150mm; covering or top of pipe minimum 300mm and side as per drawing and 98% compaction must be ensured. Dimensions to be maintained after compaction of the bedding sand.

Prior to the conclusion of any working day, the Contractor shall ensure that the trench is backfilled to surface to within 40 metres of the leading edge of the pipe installed that day.

The Contractor will not be permitted to install any new pipe on subsequent working days until the backfill is within this limit.

Price of the bedding sand is all-inclusive like carrying, screening, spreading, compaction, levelling etc.

**30. PIPE INSTALLATION**

600 mm PVC CSA Certified B182.2-M90 pipe to be installed.

PVC gravity sanitary sewer pipe and fittings (large diameter 450 mm to 675 mm) shall conform to CSA certified B182.2-M90, minimum pipe stiffness of 320 kPa and ASTM F679-89. Specification from manufacture shall supply to Engineer and shall not be installed until approved by the City.

Price includes supply and installation including all assorted fittings and labours.

**31. MANHOLE INSTALLATION**

1200mm diameter 3.7m depth precast concrete deep manhole to be installed according to the City of Moose Jaw Standard Drawings & Specifications.

Precast Manhole Units: Designed and constructed to the requirements of ASTM C478 with dimensions shown on the drawings and/or as designated by the Engineer. Cement shall be Type 50 Sulphate Resistant Portland Cement meeting CAN/CSA-A5/A8/A362-M89.

Minimum wall thickness shall be 90 mm. All manhole sections shall have single offset or grooved "O" ring rubber gasket joints manufactured in accordance with the provisions of ASTM C443.

Frames and Covers: Close-grained grey cast iron meeting ASTM A48, Class 20 or cast steel conforming to ASTM A27, Grade 70-36. The substitution of ductile iron meeting ASTM.A445 for cast iron or cast steel shall be subject to the approval of the Engineer.

All frames and covers shall be true in form and dimension, free from faults, sponginess, cracks, blow holes, and other defects. Bearing surfaces shall be machined to prevent rocking.

Frames and covers shall be bitumen coated by dipping. All manhole covers shall have only one lifting/vent hole.

Manhole Steps: Shall be aluminum, conforming to the requirements of ASTM C478M. Manhole rungs shall be firmly embedded in the manhole structure approximately 400 mm on centre vertically and shall be staggered 300 mm on centre. If 400 mm wide rungs are used, the rungs shall be positioned in line.

Precast concrete lift rings shall be used in order to raise the manhole cover to the finished grade.

Price includes supply and installation including all assorted fittings, precast base, barrels, fixed type manhole frame & cover, beveled top, benching, excavation and back filling and labours.

### **32. BACKFILL MATERIAL**

The Contractor shall import backfill material when suitable excavated material is not available and will backfill and compact it followed by gravel (Granular Type –A), top 150mm layer (if road is not restored within seven (7) days after backfilling) otherwise to sub-grade level (if road is to be within seven (7) days. No extra payment will be made for the supply and handling of imported backfill material.

#### **a. BACKFILL IN THE PIPE ZONE**

Backfill with bedding material placed in uniform layers not exceeding 150 mm compacted thickness and compact to completely fill spaces under and adjacent to the pipe. Place bedding material to lines and depths required. Provide bell and coupling space along the trench bottom so that the pipe barrel is evenly supported throughout the entire length. Mechanically compact to each lift to a minimum of 98% Standard Proctor Density. Mechanical or pneumatic compaction equipment shall be used to compact bedding around and up to the spring line of the pipe and for compacting select backfill to 300 mm above the pipe.

**b. BACKFILL ABOVE THE PIPE ZONE**

Backfill uniform layers shall be 150 mm unless otherwise approved by an Engineer. Compact backfill to a minimum of 95% Standard Proctor Density. Control moisture content of the in situ backfill material within  $\pm 3\%$ . Haul and dispose of all material that is unsuitable for use. If material is saturated due to ground water but would otherwise be suitable as backfill, material can be hauled to staging area to be dried and incorporated after acceptable moisture levels are achieved. Import and place acceptable material.

**c. BACKFILL COMPACTION**

Compact backfill adjacent to or under slabs, footings and pipes to 100% Standard Proctor Density. Use either hand operated tamper or pneumatically powered structure. Place and compact backfill around structures as to keep load distributed evenly around the perimeter. The Engineer reserves the right to, at the discretion of the on-site inspector; request a wheel-loading test to verify the tested densities. The tests shall be conducted using a Contractor supplied tandem axle dump truck fully loaded with Class II backfill material. Any deflection of the soil will result in removal, replacement, and re-compaction of the failed area regardless of the tested density numbers at the Contractor's expense.

Price including materials, screening, 150mm layer compaction at least 98%, carrying etc. Measurement and payment back filling will be at the contract unit price per linier metre.

**33. EXCAVATION TO WASTE**

All excavated material that is not required for backfilling and sub-grade preparation shall be loaded and hauled to the municipal landfill or 1100 block or High Street West. Additionally, any unsuitable material will also be included in this item. All landfill fees will be waived. The Contractor must separate asphalt, and concrete from all other materials and haul those materials to the High Street recycle centre.

There will be no cost for this item. Contractor should consider it in the excavation item during pricing

**34. CONSTRUCTION COMPLETION AND FINAL INSPECTION**

Upon written request by the Contractor, the City will inspect all aspects of the final product within two weeks and provide a list of all deficiencies within one week of inspection. A representative of the Contractor must sign the inspection report.

**35. CLEAN UP**

The contractor shall clean up the site as the work progresses. It is contractor's responsibility and there will be no measurement and payment for clean up as this is considered incidental to the contract.

**36. GRAVELED ROAD RESTORATION**

The contractor shall restore the Gravel Pathway at the end stage of the job. Granular materials as per City of Moose Jaw Standard Specifications below. At least 3m wide & 150mm depth is required.

Provide granular material having the following gradation limits.

<b>SIEVE SIZE PERCENT PASSING</b>	<b>SIEVE SIZE PERCENT PASSING</b>
28 mm	100
20 mm	90 – 100
12.5 mm	70 – 100
5 mm	45 – 85
2 mm	30 – 65
800 µm	15 – 40
400 µm	12 – 30
160 µm	9 – 20
80 µm	7 - 15

Maximum Permeability  $1 \times 10^{-4}$  cm/sec.

Do not supply or place imported material until a sieve analysis has been submitted to and approved by the Engineer.

Price includes materials, screening, levelling, compaction, shaping, watering etc.

**37. SILT FENCE**

Contractor has to place 100m silt fence on the north side of the location to protect Thunder Creek from siltation or a temporary sediment control. Width of silt fence shall be at least 0.30 metre or wider. Engineering Department will be responsible for getting the Aquatic Habitat Protection permission from the Water Security Agency.

Price will be inclusive materials, labours etc.

**38. PROGRESS PAYMENTS**

The Contractor is required to submit progress payments in a format similar to the Tender Form, detailing quantities and cost by location of work. The Contractor shall provide supporting documentation such as weigh tickets (and summaries), change orders and force account sheets to the Engineer covering the Progress Payment reporting period.

**39. APPENDIX "A" PLAN & PROFILE**

Plan & Profile of the project area.

**40. APPENDIX "B" DRAWINGS**

Drawings

**END OF SPECIFICATIONS**