

SECTION 01 52 10 (R1)

CONSTRUCTION SEQUENCING

PART 1 GENERAL

1.1 SUBMITTALS

- A. The Contractor shall incorporate the specified sequence of construction into their progress schedule. The Contractor may propose an alternative sequence of construction to accelerate the construction schedule for review and approval by the Contract Administrator
- B. The Contractor shall submit drawings of the plug described in Section 1.5 below, sealed by a Professional Engineer licensed in the Province of Manitoba for review by the Contract Administrator.

1.2 INTENT

- A. This section includes construction sequencing constraints and a suggested sequence of construction that will satisfy the constraints required in the prosecution of the Work.
- B. The suggested sequence of construction described herein is general in nature and illustrates the design intent with respect to prosecution of the Work. Prepare and submit a proposed sequence of construction for review by the City and Contract Administrator. This review will serve to satisfy the City and Contract Administrator that all mandatory construction sequencing constraints have been properly addressed by Contractor in the proposed sequence of construction but shall in no way absolve Contractor of complete responsibility for prosecution of the Work in accordance with the requirements of the Contract documents.
- C. The suggested sequence of construction described herein outlines the intent of the design with respect to the general progress of Work. The descriptions of construction activities as outlined in this section are not intended to be comprehensive or all-inclusive. Many other construction activities and work components, although not specifically noted in this section, are integral parts of the Work and shall be scheduled and completed by Contractor in accordance with the Contract documents.
- D. The broad grouping of parts of the Work under phases, stages, or similar divisions in the suggested sequence of construction is intended to illustrate the general sequence for prosecution of the Work as envisioned by Contract Administrator. Such grouping shall in no way absolve Contractor of complete responsibility for the construction means, methods, techniques, sequences, and procedures of construction, or the safety precautions and programs incidental thereto.

### 1.3 COORDINATION

- A. The facility will be maintained in continuous operation without interruption throughout the duration of the Contract. Cooperate with the City and do not interfere unnecessarily with the day-to-day operations of the facility. At all times provide the City with unhindered access to all portions of the facility that are in operation.
- B. Coordinate the requirements of this section with the other requirements of the Contract documents.

### 1.4 SERVICES PROVIDED BY CONTRACTOR

- A. Provide all necessary temporary power, pumping facilities, pipes, valves, fittings, diversions, and as required during construction, water leakage testing, and changeover of flows from one pipe, or sewer to another.
- B. In general, place into service all piping, sewers, electrical connections and similar facilities before removing any existing parallel facilities from service.
- C. In general, the City will remove from service and empty process units, tanks, sewers, channels, pipelines, and similar facilities only once, unless otherwise specified.

### 1.5 SUGGESTED SEQUENCE OF CONSTRUCTION

- A. The suggested sequence of construction described herein is based on Contract Administrator's knowledge of the design components of the Project and not on experience in the construction of such Work. Contract Administrator assumes no responsibility for the time required to construct the Work following the suggested sequence of construction.
- B. It has been assumed that the construction of the Bioreactors and Secondary Clarifiers would occur concurrently in order to comply with the specified Substantial and Total Performance dates.
- C. Contractor may on his own initiative submit an alternate proposed sequence of construction to Contract Administrator for review. Such review shall in no way make Contract Administrator responsible for the time or costs required to construct the Work following Contractor's alternate sequence of construction.
- D. For tie-ins to existing process units that require interruption to, or temporary shutdown of, processes or equipment, carefully plan and sequence such tie-ins well in advance for approval by the City.
- E. Incorporate the construction constraints and sequence of construction in the Progress Schedules required in section 01 32 00, Construction Progress Documentation
- F. Construct the Work in stages to allow for the City's continuous occupancy and uninterrupted operation and maintenance of the existing facilities during construction. Be responsible for all temporary connections required to maintain the City's operations.

Unless specifically indicated otherwise, new systems or subsystems, as appropriate, must be placed into service before existing systems are taken out of service and made available for use by Contractor.

- G. Include in the sequence of construction and Progress Schedule operations requiring actions by the City, such as the redirection of flows, isolation or draining of tanks, channels, and pipelines, and short-term process and power outages. Submit written request for such scheduled operations to Contract Administrator a minimum of 14 days in advance, for consideration by The City and Contract Administrator, describing the reasons for, anticipated duration of, and areas affected by any process and power outages. Provide temporary means as required to maintain utilities such as power, gas, fuel oil, air, and water as appropriate to critical facility components if requested by The City and Contract Administrator.
- H. For operations requiring action by the City, allow a reasonable time period in the Progress Schedule (minimum of 4 days unless noted otherwise) for the City to drain individual tanks or channels before making them available to Contractor.
- I. Perform the work continuously and expeditiously during process and power outages, critical connections and changeovers, and as required to minimize interruption of the City's operations.
- J. Coordinate the proposed work with the City and Contract Administrator prior to unit process shutdowns. Under no circumstance stop the work at the end of a normal working day if such action may cause a cessation of any facility operating process. In such cases, remain on site until the necessary work is complete.
- K. Do not open or close valves, isolate pipes or channels, or take any other action that may affect the operation of new or existing facilities without written approval from the City or Contract Administrator. Give the City and Contract Administrator at least 14 days written notice of any activities that may affect the operations of the facilities.
- L. Carefully examine the existing utility services at the Site to determine the difficulty of the work and the number and type of pipelines and cables required to be re-routed or protected from damage during construction of the work.
- M. Secondary Clarifier No. 4, construction sequence as follows:
  - 1. Tie-in for effluent channel requires an installation of a plug in the existing drop shaft as shown on Drawing SGAD-S010, and Section Q on Drawing SGAD-S031. The installation of the plug requires a plant wide shutdown and can only take place during the winter low flow season (exact dates to be determined by the City). The plant shutdown duration shall be in accordance with Section 01 35 13 Clause 1.14.B. Once Contractor has completed scope of work, return the existing infrastructure to original conditions. Note this operation will require shutdown of Secondary Clarifier No. 3. Duration of Secondary Clarifier No. 3 shutdown is limited to 30 calendar days.
  - 2. Contractor to seek approval from City to isolate north mixed liquor channel in order to penetrate existing concrete wall to connect influent box as shown on Plan Drawing SGAD-S010, and Section T on Drawing SGAD-S032.

- N. Secondary Clarifier No. 5, construction sequence as follows:
1. Tie-in for effluent channel requires an installation of a plug in the existing drop shaft as shown on Drawing SGAD-S009, and Section J on Drawing SGAD-S028. The installation of the plug requires a plant wide shutdown and can only take place during the winter low flow season (exact dates to be determined by the City). The plant shutdown duration shall be in accordance with Section 01 35 13 Clause 1.14.B. Once Contractor has completed scope of work, return the existing infrastructure to original conditions.
  2. Contractor to seek approval from City to isolate north mixed liquor channel in order to penetrate existing concrete wall to connect influent box as shown on Plan Drawing SGAD-S009, and Section K on Drawing SGAD-S029.
- O. The opening to be plugged as part of scope of work described in M and N above is approximately 1.22 m x 1.22 m, with an expected upward pressure of 85 kPa. After the plug is removed, Contractor to restore concrete to original condition.

#### 1.6 MONITORING AND EMERGENCY RESPONSE

- A. Have the necessary resources, materials, personnel, and equipment readily available to provide continuous 24 hour per day, 7 day per week monitoring and emergency repair of sheeting, shoring, and other such temporary systems that are used to maintain plant operations where, in the opinion of The City or Contract Administrator, the failure of such temporary systems could adversely impact plant operations.

#### 1.7 ELECTRICAL AND TEMPORARY POWER

- A. To minimize the duration of shutdowns and keep the facility in continuous operation, maintain, to the maximum extent possible, existing electrical systems in operation while new electrical components are installed, or the existing systems are modified or replaced as required for the final electrical system configuration. Where this is not possible, provide temporary power in the form of overhead lines or portable generators at no additional cost to the City.
- B. Prior to commencement of the Work, provide and check all necessary temporary services required to ensure that the existing facility will operate in an uninterrupted fashion during the construction period. Make connections on an individual, rather than group, basis in order to minimize shutdowns. Prior to proceeding, provide a schedule with a written description of each operation for Contract Administrator's review.

#### 1.8 FIRE PROTECTION

- A. Do not introduce combustibles into any facility until full fire protection is in service.
- B. Maintain existing fire protection systems, fire walls, fire doors, and other separations in service as long as possible. Notify Contract Administrator and The City in writing a minimum 14 days prior to disrupting or dismantling existing fire protection services.
- C. Place new fire protection systems in service as soon as possible and notify Contract Administrator upon completion of new fire protection services.

- D. Provide adequate supplementary fire protection facilities including but not limited to ample hand-operated 15 to 20 pound multipurpose dry chemical extinguishers in each facility. Provide temporary hose lines in areas where construction is in progress until the permanent fire protection is placed into service. Do not block hydrant hose connections and other fire fighting equipment by construction equipment and make readily accessible at all times.
- E. Dispose of all combustible rubbish promptly and safely. Prompt disposal is particularly needed for material subject to spontaneous ignition such as oily waste and paint rags.
- F. Monitor and control probable ignition sources as necessary to prevent the threat of fire.
- G. Minimize hot work including but not limited to operations involving open flames, heat, or sparks such as brazing, cutting, grinding, soldering, and torching. If there is a practical and safer way to do the work without hot work, the alternative method shall be used.
- H. Hot work shall end no less than one (1) hour prior to end of shift and area inspected prior to daily departure by the Contractor's site supervisor and / or tradesman.

## PART 2 PRODUCTS

### 2.1 GENERAL

- A. Unless specifically stated otherwise, provide all labour, materials, and equipment necessary to accomplish the work of this section.

## PART 3 EXECUTION

### 3.1 CONSTRAINTS

- A. Schedule and complete connections to existing services within the following time constraints:
  - 1. Shutdowns and the associated connection work shall be scheduled to begin at 0300 hours and normal plant operation will be scheduled to resume no later than 0900 hours.
- B. Seniuk Road is subject to seasonal road restrictions as defined by Manitoba Infrastructure and Transportation (MIT). Contractor shall coordinate the Work and or obtain approvals from MIT to allow the Contractor to haul normal weights during restriction periods to minimize delay or disruption in the performance of the Work.
- C. Contractor shall maintain safe access to the Site for at all times.

END OF SECTION