***ADD THE FOLLOWING SECTION TO DIVISION II – CONSTRUCTION DETAILS***

SECTION 696 – ENVIRONMENTAL CONTROL SANITARY SEWER REHABILITATION

**DESCRIPTION**

**696.01.01 GENERAL**

A. The Contractor shall provide and maintain methods, equipment, and temporary construction, as necessary to provide controls over environmental conditions at the construction site and adjacent areas.

B. The Contractor shall remove physical evidence of temporary facilities at completion of work.

C. Raw sewage releases are not permitted. The Contractor shall be responsible for all consequences and damages caused by the overflow due to the Contractor’s work activities.

D. Contractor shall give both verbal and written notification to the Engineer immediately in the event of any sewage spill and written notification within 4 hours.

**CONSTRUCTION**

**696.03.01 TRAFFIC CONTROL**

A. The Contractor shall select its transportation routes for hauling materials, equipment, or imported products based on the existing condition of the pipelines and impacts on local traffic and the work being performed. The transportation routes shall be documented in a traffic control plan.

B. All streets, traffic ways, and sidewalks shall be kept open in a safe manner for the passage of traffic and pedestrians during the construction period unless otherwise approved by the Engineer.

C. When required to cross, obstruct or close a street, traffic way, or sidewalk for a short duration that is approved by the Engineer, the Contractor shall provide and maintain suitable bridges, detours or other approved temporary routes for the accommodation of vehicular and pedestrian traffic. Closings shall be for the shortest time practical, and passage shall be restored immediately after completion of construction.

D. Contractor shall give the Engineer 24 hours advance notice of his proposed operations within any public right-of-ways and temporary roadway closings.

E. Contractor shall provide signs, signals, barricades, flares, lights and all other equipment, service and personnel required to regulate and protect all traffic, and warn of hazards.

1. All such work shall conform to requirements of the Contracting Agency having jurisdiction and the MUTCD.
2. Remove temporary equipment and facilities when no longer required and restore grounds to original condition, or condition specified by the Engineer.

F. The Contractor shall provide a Traffic Control Plan and implement traffic control around all work as part of this contract in accordance with Section 624 “Accommodations for Public Traffic”.

**696.03.02 ODOR CONTROL**

A. The Contractor shall employ methods and procedures that mitigate the generation and discharge of objectionable odors to the surface environment at all times as described below.

1. Chemical containment shall be provided for all chemicals.
2. Contractor shall provide minimum of two (2) chemical feed pumps (one primary and one backup) sized to provide constant dosing at chemical manufacturer’s recommended rates.
3. When possible, the Contractor shall add ferric chloride from a location upstream that will allow 10 to 15 minutes reaction time before the flow enters the work area.

a. If upstream sewage stream is within a private system, permission must be granted from system owner for chemical dosing.

b. Contractor is responsible for gaining permission from system owner of private system and all associated costs.

1. The chemical dosing shall reduce odors generated from the wastewater stream to an undetectable level.
2. If this is not accomplished by adding the ferric chloride only, additional control is required.

a. The Contractor shall add hydrogen peroxide downstream to the flow that has been dosed with ferric chloride. The chemical dosing rate shall be as recommended by the manufacturer.

b. When possible, the hydrogen peroxide shall be added to allow a 5-minute reaction time before flow enters the work area. The chemical dosing rate shall be as recommended by the manufacturer.

i. If upstream sewage stream is within a private system, permission must be granted from system owner for chemical dosing.

ii. Contractor is responsible for gaining permission from system owner of private system and all associated costs.

1. Contractor shall maintain the SDS certifications on-site for each chemical.
2. All manufacturer recommended piping, valves and safety equipment necessary for successful completion of the work and safety of personnel shall be provided by the Contractor.
3. Additional odor control considerations are covered in section 697 “Styrene Controls”.

**696.03.03 ODOR CONCENTRATION MONITORING**

1. It shall be the responsibility of the Contractor to continuously measure wastewater streams and headspace odorant concentrations to provide sufficient equipment, chemicals and labor to control odors generated by the sewer rehabilitation work. The initial measurements taken by the Contractor shall include but not be limited to: BOD, liquid stream temperature, street level hydrogen sulfide, liquid stream pH, and time and date.
2. In addition to initial monitoring and during the first week of each new flow bypassing setup the Contractor shall monitor each of the above parameters at least four (4) times daily (minimum of 4 hours required between monitoring), and during subsequent weeks monitoring during the peak daily flow will be required.
3. The Engineer reserves the right to request monitoring data at any time. Odor control monitoring logs shall be submitted to the Engineer on a monthly basis. Additional odor concentration monitoring considerations are covered in section 697 “Styrene Controls”.

**696.03.04 CHEMICAL FEED SITE REQUIREMENTS**

1. Chemical Feed Site requirements shall include temporary chemical feed locations which add chemicals directly to the sanitary sewer flows. This may include multiple chemical addition locations along the pipelines being rehabilitated. Chemical manufacturer’s recommended safety equipment shall also be included to provide adequate protection to contracting personnel and the local community. Sufficient safeguards shall be provided to prevent tampering with stored chemicals at each feed site.
2. When possible, the Contractor shall add the chemical from an upstream location that will allow proper reaction time, as specified herein or recommended by the manufacturer, before the flow enters the Work area. Each feed site shall be capable of delivering adequate amounts of chemical to maintain headspace hydrogen sulfide concentrations at the bypass location to an average of not more than 10 PPM. One chemical feed pump shall be used as a primary pump, with the second chemical feed pump as backup in the event of failure of the first chemical feed pump. The Contractor shall adjust the liquid feed rate as field conditions warrant and as recommended by the chemical manufacturer in order to reduce hydrogen sulfide-related odors to the concentration specified in this Section.

**METHOD OF MEASUREMENT**

**696.04.01 MEASUREMENT**

No measurement will be made for Environmental Control Sanitary Sewer Rehabilitation.

The quantity of [FILL IN ITEM DESCRIPTION] will be measured per [UNIT].

No direct measurement shall be made for [FILL IN ITEM DESCRIPTION].

**BASIS OF PAYMENT**

**696.05.01 PAYMENT**

Unless otherwise provided in the Special Provisions, no payment will be made for Environmental Control Sanitary Sewer Rehabilitation as such. The cost thereof shall be considered as included in the price bid for construction or installation of the items to which such Environmental Control Sanitary Sewer Rehabilitation is required.

The accepted quantity of [FILL IN ITEM DESCRIPTION] will be paid for at the contract unit price of [UNIT] and shall include all materials, equipment and labor required including, but not limited to, [FILL IN] and all other items necessary to complete the work as shown on the Plans, as specified herein and as directed by the Engineer.

Unless otherwise provided in the Special Provisions, no payment will be made for [FILL IN ITEM DESCRIPTION] as such. The cost thereof shall be considered as included in the price bid for construction or installation of the items to which [FILL IN ITEM DESCRIPTION] is required.

**END OF SECTION 696**