NOTE TO CONSULTANTS: Edit with Track Changes turned on, any text in this section that appears in bold and italics then turn off the bold and italics for the final approved version. (Remove this Note).

PART 1 - GENERAL

1.01 Description: Work includes sanitary sewer lines, fittings, cleanouts, accessories, bedding, and connections to existing sewer lines.

1.02 Related Sections:

Section 01 56 39 - Temporary Tree & Plant Protection
Section 01 57 13 - Construction Stormwater Control
Section 01 76 00 - Protection of Existing Facilities
Section 02 41 13.23 - Site Utility Removal
Section 31 00 00 - Earthwork
Section 32 11 23 - Mineral Aggregates

1.03 References:

A. The City of Seattle Standard Plans and Specifications for Road, Bridge, and Municipal Construction, (most recent edition).

B. The City of Seattle Stormwater, Grading and Drainage Code, (most recent edition).

1.04 Quality Assurance:

A. The contractor responsible for the work of this section shall be a **Registered Side Sewer Contractor registered with the City of Seattle Department of Planning & Development (DPD)**. Prior to the commencement of the work, verify the accuracy of horizontal and vertical layout, and dimensions of excavations to receive the work of this section.

B. Permits, Inspections and Testing:

1. Permits: Permits are required by SPR and DPD for all sanitary sewer work. For side sewer permits refer to the following website for permitting requirements: **www.seattle.gov/dpd/sidesewer.**
2. Inspections: 48 hours prior to the back-filling of any pipe, structures, or appurtenances, notify the Engineer for approval. Anticipate inspections to allow sufficient time for inspections to take place without affecting the work of other trades. Call the **SPR Inspection Request Line @ (206) 684-7034 or by email at parksconstruction.inspection@seattle.gov** to make arrangements for inspections.
3. Testing will consist of air or water pressure testing to verify the function of the installation. In cases where long runs of tight line is to be tested to allow backfill, and that work is not connected to the terminal downstream end of

the work, verification of slope will be performed by surveying the crown or invert.

1.05 Submittals:

A. Submit the following for approval prior to delivery to the site and commencement of the work:

1. Manufacturer's product data for pipe, concrete and metal castings.
2. Manufacturer's installation instructions.

1.06 Project Record Documents:

A. Submit documents under provisions of Division 01. Record location of pipe runs, connections, structures, and invert elevations. Identify and describe unexpected variations to the designed plan.

B. Provide a record of inspection of internal conditions of the existing sewers using television cameras.

1.07 Coordination: Coordinate Sanitary Sewerage Utility work with the work in other sections of these specifications.

PART 2 - PRODUCTS

2.01 General: All materials and equipment listed herein shall be new and of the type specified. Comply with Specifications and manufacturer's data. Where these may be in conflict, the more stringent requirements govern, at the direction of the Engineer.

2.02 Pipe and Fittings:

A. Sanitary Sewer Solid/Tight Line Pipe shall be PVC pipe, which meets or exceeds ASTM 3034, minimum 6-inch diameter or greater as sized per the contract drawings, conforming to the City of Seattle Standard Plans and Specifications for Road, Bridge, and Municipal Construction (most recent edition). Joints for PVC pipe conform to ASTM D3212 using restrained gasket conforming to ASTM F477.

B. Fittings: Fittings shall be injection molded PVC, conforming to ASTM 3034.

2.03 Cleanouts (CO): Cleanouts installed on Seattle Parks' properties shall conform to the City of Seattle Standard Specifications (most recent edition) Type 280 (with SPR exceptions) per SPR Standard Details at the following website: www. seattle.gov/parks/projects/standards/.

2.04 Pipe Bedding (for Rigid Pipe):

A. Pipe bedding material for shall be Class B mineral aggregate Type 9 (or Type 22 for PVC pipe) per City of Seattle Standard Specifications (most recent edition).

B. Non-rigid Pipe shall be bedded with mineral aggregate Type 22 per City of Seattle Standard Specifications (most recent edition).

2.05 Identification Tape:

A. Utility pipe tracer tape shall be detectable below ground surface, color coded, with utility name printed on tape. Conductive warning tape required over all water, sewer, drainage, and irrigation pipe at 6” below finished grades. Underground - Type Plastic Line Markers: Permanent, bright-colored, continuous-printed plasticized aluminum tape, intended for direct-burial service; not less than 3" wide x 5 mils thick. Detectable Marking Tape colors shall be as follows:

Tape Schedule:	Piping	Color	Wording
	Sanitary Sewers	Green	Caution Sanitary Sewer
	Storm Drains	Green	Caution Storm Drainage

2.06 Maintenance Holes (MH): Maintenance Holes shall be City of Seattle Standard Plans Types 200, 201 or 202 Maintenance Holes, as shown on the contract drawings and details. Provide ladder, trap, frame, solid cover and all other required appurtenances per Plans and Details. Frames and Covers shall be Type 230L with "Sewer" printed on the cover. All covers shall have cam-locks and shall be bolt down covers with stainless steel bolts and hex keys. All bolts shall be installed using an “anti-seize” product.

2.07 Fittings, Couplings and Jointing:

A. All Fittings shall be made of the same material as the pipe.

B. All Tees on existing pipe installations shall be connected by core drilling and installing flexible connections.

C. Pipe to pipe connections (between pipes of differing materials) shall be made with a flexible gasketed coupling, adaptor or coupling-adaptor which shall make a watertight joint. Couplings shall be as manufactured by Romac, Omni, Caulder, or approved equal.

D. Jointing and/or Break-out & Reconnect of mismatched pipe wall thicknesses shall be installed per City of Seattle Standard Plans and Specifications (most recent edition).

2.08 Grout: Grout material for pipe penetrations and sediment trap hook installation at Pre-cast Concrete Structures shall be non-shrink cement sand grout only. **“Jet Set” or equivalent products are not acceptable.**

PART 3 - EXECUTION

3.01 General:

A. Verify that excavation base is ready to receive work and excavations, dimensions, and elevations are as indicated on the Drawings.

B. Excavation tolerance of sub-grade shall be +/- 0.05 feet. Sub-grade must be in a smooth, even condition prior to placement of any permeable material. All depths shown are to be compacted depths. Where material is placed as fill, the Contractor shall compact the material as required by Section 31 00 00 - Earthwork. If excavated material exceeds the quantity needed as on-site common fill, excess materials shall be removed from the site.

3.02 Trenching:

A. Trenches shall be cut with smooth sides, no less width than as shown on the Drawings. In the event that the trench has been over-excavated, the Contractor shall correct by use of the gravel filter material, as long as the invert elevations of the pipe and the minimum gravel filter material and fabric are per the Plans. Trench bottom shall be smooth and compact and to the grade specified. Also, refer to Section 31 00 00 - Earthwork for backfilling information.

B. All trenches shall be maintained with vertical sides and without loose or sloughed materials therein; care shall be taken in placement of gravel to insure no sloughing of trench sides or contamination of the gravel. The Contractor shall not drive construction vehicles across excavated or back-filled trenches but shall use alleys between trenches for travel ways. Exception will be granted only when the Contractor can show evidence that the bridging scheme he proposes will ensure conformance with the foregoing.

3.03 Bedding: Place bedding material at trench bottom, level materials in continuous layers not exceeding 6 inches of compacted depth. The Contractor shall compact the bedding to 95% of the maximum dry density. Maintain optimum moisture content of bedding material to attain required compaction density.

3.04 Pipe Laying:

A. Install pipe, fitting, and accessories in accordance with City of Seattle Standard Plans and Specifications, (most recent edition).

B. Lay pipe to slope gradients noted on Drawings, with maximum variation from true slope of 1/8 inch in 10 feet (maximum).

C. Install bedding at sides and over the top of pipe to minimum compacted thickness of 12 inches compacted to a minimum of 95% of the maximum dry density.

D. Refer to Section 31 00 00 - Earthwork for additional backfilling information.

3.05 Detection Tape: Install detection tape in all pipe trenches located above the top of all pipes at 6” below finished grades.

3.06 Tie In: Connect new sanitary sewer line to existing sewer line with "Romac" type fittings (or approved equal) and per the requirements of the Seattle Public Utilities (Drainage and Wastewater Division). Provide shoring and de-watering per the requirements of the City of Seattle Standard Plans and Specifications (most recent edition).

3.07 Bedding Inspections:

A. Contractor shall request inspection by the Engineer prior to and immediately after placing bedding. Minimum 48 hours notice is required.

B. Compaction testing will be performed in accordance with the City of Seattle Standard Specifications and ASTM D1557. If tests indicated work does not meet specified requirements, remove work and replace and retest at no additional cost to the Owner.

3.08 Cleaning, Testing and Inspections: All new pipe and structures shall be cleaned and tested per City of Seattle Standard Specifications (most recent edition) or as directed by the Engineer. Testing shall be conducted under the direction of the Engineer, by calling the **SPR Inspection Request Line @ (206) 684-7034 or by email at parksconstruction.inspection@seattle.gov** to make arrangements for inspections.

END OF SECTION