SECTION 02505
SANITARY SEWER SERVICE STUB-OUTS OR RECONNECTIONS

PART I: GENERAL

1.1 GENERAL REQUIREMENTS

A. Installation of service stub-outs in sanitary sewers serving areas where sanitary sewer service did not previously exist.

B. Reconnection of existing service connections along parallel, replacement or rehabilitated sanitary sewers.

1.2 MEASUREMENT AND PAYMENT

A. Unit Prices:

1. Payment for sanitary sewer service stub-outs or service reconnections with stacks located within five feet (5 Ft) of sanitary sewer main centerline is on a unit price basis for each stub-out or reconnection. Payment shall be made for each service stub-out or reconnection installed complete in place, including service connections, couplings and adapters disconnecting existing services, reconnecting new service, fittings, excavation and backfill.
2. Payment for sanitary sewer service stub-outs or service reconnections without stacks located within five feet (5 Ft) of sanitary sewer main is on a unit price basis for each stub-out or reconnection. Payment shall be made for each service stub-out or reconnection installed complete in place, including service connections, couplings and adapters disconnecting existing services, reconnecting new service, fittings, excavation, backfill and testing.
3. Payment for sanitary sewer service lines more than five feet (5 Ft) laterally from sanitary sewer main is on a linear foot basis. Measurement shall be taken along centerline of pipe from centerline of lateral connection or stack to end of service for service stub-outs laid in open-cut excavation. Payment shall be made for each linear foot of pipe installed, complete in place, including sanitary sewer pipe, excavation, shoring, bedding, backfill and accessories in addition to payment for sanitary sewer stub-outs or service connections with or without stacks. Augered pipe for service stub-outs shall be paid as provided in Section 02275 – Pipe and Casing Augering for Sanitary Sewers.
4. Pay estimates for progress payments shall be made as measured above according to following schedule:
    a. An estimate for ninety-five percent (95%) payment shall be authorized when stub-out or reconnection is completely installed and backfilled.

b. An estimate for one hundred percent (100%) payment shall be authorized when stub-out or reconnection has been tested as specified in Section 02525 – Acceptance Testing for Gravity Sanitary Sewer Lines.

5. One (1) or more connections discharging into a common point are considered one (1) service connection. The Contractor shall not increase the quantity of service reconnections without approval of the Project Manager. The Project Manager may require connections to be relocated to avoid having more than two (2) service connections per reconnection to sanitary sewer.
6. Protruding service connections which must be removed to allow liner insertion are paid as a service reconnection when connected. If abandoned, they shall be paid as an abandoned connection.
7. Payment for abandonment of service connections is on a unit price basis for each abandoned service connection. No separate payment shall be made for abandonment of a service connection unless excavation is required. No separate payment shall be made for excavation of sanitary sewer services within new or replacement sanitary sewer trench.
8. No separate payment shall be made for removal of existing sanitary sewer service stub-outs. Include payment in the unit price for Section 02505 – Sanitary Sewer Service Stub-outs or Reconnections.
9. No separate payment shall be made for abandoned service connections when service to be abandoned is within four feet (4 Ft) of active connection. Payment for only one (1) abandoned service connection shall be allowed when second (2nd) abandoned connection is within four feet (4 Ft) of first (1st).
10. If faulty remote cut is later corrected using procedures specified for reconnection by excavation, only one (1) reconnection shall be allowed for payment.
11. Refer to Section 01270 – Measurement and Payment for unit price procedures.

B. Stipulated Price (Lump Sum):
1. If Contract is Stipulated Price Contract, payment for work in this Section is included in Total Stipulated Price.

1.3 REFERENCES
A. ASTM – American Society for Testing and Materials.
1. ASTM D1784 – Standard Specification for Rigid Poly (Vinyl Chloride) (PVC) Compounds and Chlorinated Poly (Vinyl Chloride) (CPVC) Compounds.
2. ASTM D3034 – Standard Specification for Type PSM Poly (Vinyl Chloride) (PVC) Sewer Pipe and Fittings.
3. ASTM D3212 – Standard Specification for Joints for Drain and

Sewer Plastic Pipes Using Flexible Elastomeric Seals.

B. CFTS – City of Friendswood Technical Specifications.

1.4 PERFORMANCE REQUIREMENTS

A. Accurately locate in field all proposed service stub-outs along new sanitary sewer main.

B. Accurately locate in field existing service connections and proposed service stub-outs along alignment of new parallel or replacement sanitary sewer main.

1.5 SUBMITTALS

A. Conform to requirements of Section 01330 – Submittal Procedures.

B. Submit product data for each pipe product, fitting, coupling and adapter.

C. Show reconnected services on record drawings. Give exact distance from each service connection to nearest downstream manhole.

PART II: PRODUCTS

2.1 PVC SERVICE CONNECTION

A. For stub-outs, use PVC sanitary sewer pipe of four inch (4 In) through ten inch (10 In) diameter, conforming to ASTM D1784 and ASTM D3034, with cell classification of 12454-B. SDR (ratio of diameter to wall thickness) shall be twenty-six (26) for pipe ten inches (10 In) in diameter or less.

B. PVC pipe shall be gasket jointed with gasket conforming to ASTM D3212.

C. Provide service connection pipe in sizes shown on the Drawings. For reconnection of existing services, select service connection pipe diameter to match existing service diameter. Reconnections to rehabilitated sanitary sewer mains shall be limited to maximum service connection diameter as specified in TABLE 4.1 – MAXIMUM SERVICE CONNECTION DIAMETER in this Section.

D. Subject to above limits, provide a six inch (6 In) service connection when more than one (1) service discharges into a single pipe.

E. Connect service pipes to parallel or replacement sanitary sewer mains with prefabricated, full-bodied tee or wye fittings conforming to the specifications for sanitary sewer main pipe material as specified in other sections for sanitary sewers up to eighteen inches (18 In) in diameter.

F. Where sanitary sewers are installed using pipe augering or tunneling or where sanitary sewer is greater than eighteen inches (18 In) in diameter, use Fowler "Inserta-Tee" to connect service to sanitary sewer main.

2.2 PIPE SADDLES

A. Use pipe saddles only on sanitary sewer mains that have been rehabilitated using partial replacement, sliplining, cured in place lining or pipe-bursting methods. Comply with Paragraph 2.1.E for new parallel

and replacement sanitary sewer mains.

B. Supply one (1) piece prefabricated saddle, either polyethylene or PVC, with neoprene gasket to accomplish complete seal. Use saddle fabricated to fit outside diameter of connecting pipe. Protruding lip of saddle must be at least five-eighths inch (5/8 In) long with grooves or ridges to retain stainless steel band clamps.

C. Use one-half inch (1/2 In) stainless steel band clamps for securing saddles to sanitary sewer pipe.

2.3 COUPLINGS AND ADAPTERS

A. For connections between new PVC pipe stub-outs and existing service, four inch (4 In), six inch (6 In) or eight inch (8 In) diameter, use flexible adapter coupling consisting of neoprene gasket and stainless steel shear rings with one-half inch (1/2 In) stainless steel band clamps:
   1. Fernco Pipe Connectors, Inc. Series 1055 with shear ring SR-8
   2. Band Seal by Mission Rubber Co., Inc.
   3. Approved equal.

B. For connections between new PVC pipe stub-out and new service, use rubber-gasket adapter coupling:
   1. GPK Products, Inc.
   2. IPS & Sanitary sewer Adapter
   3. Approved equal.

2.4 STACKS

A. Provide stacks for service connections wherever crown of sanitary sewer is eight feet (8 Ft) or more below finished grade.

B. Construct stacks of same material as sanitary sewer and as shown on the Drawings.

C. Provide stacks of same nominal diameter at sanitary service line.

2.5 PLUGS AND CAPS

A. Seal upstream end of unconnected sanitary sewer service stub-outs with rubber gasket plugs or caps of same pipe type and size. Provide plugs or caps by GPK Products, Inc. or approved equal.

PART III: EXECUTION

3.1 PERFORMANCE REQUIREMENTS

A. Provide minimum of seventy-two hours (72 Hrs) notice to customers whose sanitary sewer service shall potentially be interrupted.

B. Reconnect service connections, including those that go to unoccupied or abandoned buildings or to vacant lots, unless directed otherwise by the Project Manager.

C. Reconnection by excavation method shall include stack and fittings and required pipe length to reconnect service line.

D. Connect services eight inches (8 In) in diameter and larger to sanitary

sewer by construction of manhole. Refer to appropriate section on manholes for construction and payment.

E. Connections to sanitary sewer lines rehabilitated by either the cured-in-place or sliplining method shall conform to the following:
   1. Accurately field locate service connections, whether in service or not, along rehabilitated sanitary sewer line.
   2. Properly disconnect existing connections from sanitary sewer and reconnect to rehabilitated sanitary sewer lines, as described in this Section.
   3. Complete reconnection of service lines within of twenty-four hours (24 Hrs) after cured-in-place liner installation, and within seventy-two hours (72 Hrs) after disconnection for sliplining of sanitary sewer lines.
   4. Reconnect services on `sanitary sewer lines rehabilitated with cured-in-place liner or sliplining at twelve feet (12 In) depth or less by excavation method. The Project Manager reserves right to require service connections by excavation when remote cut service connection damages lines.

F. Reconnections to new or replacement sanitary sewer lines shall conform to the following:
   1. Accurately field locate service connections, whether in service or not, along sanitary sewer line. For new and replacement sanitary sewers, service connections may be located as pipe laying progresses from downstream to upstream.
   2. Properly disconnect existing connections from sanitary sewer and reconnect the new or replacement sanitary sewer line, as described in this Section.
   3. Complete reconnection of service lines to restore sanitary sewer service in the shortest possible time.
   4. Reconnect services on new or replacement sanitary sewer lines at twelve feet (12 In) depth or less by excavation method. The Project Manager reserves right to require service connections by excavation when remote cut service connection damages lines.

3.2 PROTECTION

A. Provide barricades, warning lights and signs for excavations created for service connections. Conform to requirements of Section 01505 – Temporary Facilities and Control.

B. Do not allow sand, debris or runoff to enter sanitary sewer system.

3.3 PREPARATION

A. Rehabilitated, new or replacement of sanitary sewer lines: Determine existing sanitary sewer locations and number of existing service connections from closed-circuit television (CCTV) inspection DVD's or from field survey. Accurately field locate existing service connections,

whether in service or not. Use existing service locations to connect or reconnect service lines or liner.

B. For rehabilitated sanitary sewer lines, allow sliplining to normalize to ambient temperature and recover from imposed stretch. For cured-in-place liners, verify that liner is completely cured. For sliplining connection procedures, refer to manufacturers recommendations.

3.4 EXCAVATION AND BACKFILL

A. Excavate in accordance with Section 02125 – Excavation and Backfill for Utilities.

B. Perform the Work in accordance with OSHA standards. Employ Trench Safety System as specified in Section 02280 – Trench Safety Systems for excavations requiring trench safety.

C. Install and operate necessary ground water and surface water control measures in accordance with requirements of Section 01585 – Control of Ground and Surface Water.

D. Determine locations where limited access, buildings or structure preclude use of mechanical excavation equipment. Obtain approval from the Project Manager for hand excavation.

3.5 RECONNECTION BY EXCAVATION METHOD

A. Strap on saddle using stainless steel band on each side of saddle. Tighten bands to produce watertight seal of saddle gasket to sanitary sewer pipe. See paragraph 3.6 for additional requirements.

B. Remove and replace cracked, offset or leaking service line for up to five feet (5 In), measured horizontally, from center of sanitary sewer pipe.

C. Make up connection between sanitary sewer pipe and service line using PVC sanitary sewer pipe and approved fittings and couplings.

D. Test service connections before backfilling.

E. Embed entire service connection in cement stabilized sand as shown on the Drawings. Place and compact trench zone backfill in compliance with Section 02125 – Excavation and Backfill for Utilities.

3.6 RECONNECTION BY REMOTE METHOD FOR CURED-IN-PLACE LINERS OR SLIPLINING

A. Make service reconnections using remote-operated cutting tools on cured-in-place liners at depth greater than twelve feet (12 Ft).

B. Employ method and equipment that restore service connection capacity to not less than ninety percent (90%) of original capacity.

C. For reconnection to sanitary sewer lines that have been sliplined, follow these requirements:

1. Remove portion of existing sanitary sewer pipe or carrier pipe to expose liner pipe. Provide sufficient working space for installing prefabricated pipe saddle.
2. Carefully cut liner pipe to make hole to accept stub-out protruding from the backside of saddle connection.

D. Immediately open missed connections and repair holes drilled in error using method approved by the Project Manager.
E. Embed service connection and service line as specified for sanitary sewer main as shown on the Drawings. Place and compact trench zone backfill in compliance with Section 02125 – Excavation and Backfill for Utilities.

3.7 RECONNECTION ON NEW OR REPLACEMENT SEGMENTS
A. Install service connections on sanitary sewer main.
B. Remove and replace cracked, offset or leaking service line for up to five feet (5 Ft), measured horizontally, from centerline of sanitary sewer main.
C. Make up connection between main and existing service line using PVC sanitary sewer pipe and approved couplings, as shown on the Drawings.
D. Test service connections before backfilling.
E. Embed service connection and service line as specified for sanitary sewer main as shown on the Drawings. Place and compact trench zone backfill in compliance with Section 02125 – Excavation and Backfill for Utilities.

3.8 INSTALLATION OF NEW SERVICE STUB-OUTS
A. Install service connections on sanitary sewer pipe for each service connection in accordance with paragraphs 3.5, 3.6 and 3.7. Provide length of stub-out indicated on the Drawings. Install plug or cap on upstream end of service stub-out as needed.
B. Test service connections before backfilling.
C. Embed service connection and service line as specified for sanitary sewer main and as shown on the Drawings. Place and compact trench zone backfill in compliance with Section 02125 – Excavation and Backfill for Utilities. Install a minimum two foot (2 Ft) length of magnetic locating tape along axis of service stub-out and nine inches (9 In) to twelve inches (12 In) above crown of pipe, at end of stub-out.

3.9 TESTING
A. Complete testing and acceptance of downstream sanitary sewers as applicable. Provide for compliance with requirements of this Section.
B. Test service reconnections and service stub-outs. Follow applicable procedures given in Section 02525 – Acceptance Testing for Gravity Sanitary Sewer Lines to perform smoke testing to confirm reconnection.
C. Perform post installation CCTV inspection as specified in Section 02520 – Television Inspection of Sanitary Sewer Lines to show locations of service connections.

3.10 CLEANUP
A. Backfill excavation as specified in Section 02125 – Excavation and Backfill for Utilities.
B. Replace pavement or sidewalks removed or damaged by excavation in

accordance with Section 02845 – Pavement Repair and Resurfacing. In unpaved areas, bring surface to grade and slope surrounding excavation. Replace minimum of four inches (4 In) of topsoil and seed according to requirements of Section 02910 – Hydromulch Seeding.

PART IV: TABLES

4.1 – MAXIMUM SERVICE CONNECTION DIAMETER

Sanitary Sewer Main Diameter	**Maximum Service Connection Diameter**
8” or less	4”
10” or greater	6”

END OF SECTION