

SECTION 625 - SEWER SYSTEM

625.01 Description. This work includes installing and/or adjusting a sewer system and the appurtenances according to the contract. *

The Contractor shall construct or reconstruct the sewer manholes according to Section 604 - Manholes, Inlets and Catch Basins. *

The terms "Sewage" or "Wastewater" and "Division of Sewers" or "Division of Wastewater Management" (DWM) will be interchangeable depending on the respective County within which the Contractor does the work. *

625.02 Materials. Materials shall conform to the following:

Bed Course Materials for Crushed Rock Cradle	703.16(C)
Structure Backfill Material	703.20
Trench Backfill Material	703.21
Joint Mortar	705.02
Lead	705.09
Packing for Lead Joint	705.10
Jointing Compound for Sewer Pipe	705.11
Reinforced Concrete for Sewer Systems	706.02(B)
Vitrified Clay Pipe and Fittings for Sewer System	706.08
Polyvinyl Chloride Pipe for Sewer System	706.09
Cast Iron Pipe and Fittings for Sewer System	707.01(A)
Reinforcing Steel	709.01
Markers	712.19(D)

Concrete for sewage structures shall conform to Section 601 - Structural Concrete. The Contractor shall modify the concrete in contact with sewage or sewage gases as follows: *

(1) The Contractor shall eliminate coral sand from the fine aggregate (use only No. 4 crusher screenings). *

(2) The Contractor shall incorporate an accepted water reducing admixture conforming to Subsection 711.03(B)- Water-Reducing Admixtures. *

625.02

(3) Portland cement shall be Type II Portland Cement or a modified Type I Portland Cement with a maximum limit of eight (8) percent on tricalcium aluminate.

Concrete for plain (non-reinforced) concrete blocks, cradles and jackets shall be Class C. Concrete for reinforced concrete blocks, cradles and jackets shall be Class B.

625.03 Construction Requirements.

(A) Open Trench Excavation for Sewer Pipes. Trench excavation for sewer pipe shall conform to Section 206 - Excavation and Backfill for Conduits and Structures and below:

(1) Widths of Trenches. The minimum trench widths for the various size pipes shall be not less than those specified in Table 625-I.

TABLE 625-I - TRENCH WIDTHS FOR SEWER SYSTEM	
Pipe Size - Inches	Minimum Trench Width - Inches
6	24
8	24
10	24
12	30
15	38
18	41
21	45
24	50
27	53
30	57
36	69
42	76
48	84
54	91

The Contractor may make increases in width over those specified * in Table 625-I. The Engineer will not allow additional compensation * for such extra widths.

For PVC pipes, the maximum allowable trench width at the top of pipe shall be equal to the outside diameter of the pipe plus * eighteen (18) inches for pipe up to twelve (12) inches inside * diameter.

If the Contractor excavates beyond the specified width and such * action results in greater load of overburden than the Department * designed the pipe for, the Contractor shall at no cost to the State: *

- (1) replace the pipe with one of higher strength or *|
- (2) provide a higher class of bedding. *|

If possible, the Contractor shall pile the excavated material *|
next to the trench. The Contractor shall not obstruct movement of *|
vehicular traffic and pedestrian walkways. If the Contractor cannot *|
pile the excavated material next to the trench, the Contractor *|
shall haul and store the material at a convenient site accepted by |
the Engineer. The Contractor shall provide access to existing *|
driveways, fire hydrants, and meters. *|

For installing pipe in new embankment, the Contractor shall *|
construct the embankment: *|

- (1) to the required height shown in the contract and *|
- (2) for a distance on each side of the pipe location of not |
less than five (5) times the diameter of the pipe. *|

The Contractor shall then excavate the trench with sides as *|
nearly vertical as permitted by the soil condition. *|

The Contractor shall set the buckets for trenching machines *|
used for excavation so the machines cut the clear width required. *|
The Contractor shall not open the trench nor break the surface of *|
the ground more than three hundred (300) feet ahead of the *|
installed pipe. The Contractor shall not leave the trench unfilled *|
more than three hundred (300) feet behind the installed pipe. *|

(2) Depth of Trenches. The Contractor shall excavate the trench
to the required depth shown in the contract. |

If the Contractor excavates the trench deeper than required *|
below the invert, the Contractor shall bring the | trench to grade *|
where shown at no cost to the State: *|

- (a) with bed course material or *|
- (b) Class C Concrete placed with the cradle. *|

If the Contractor comes upon mud or other unsuitable material *|
in the bottom, the Contractor shall excavate below grade to such *|
depth and width as ordered and backfill with bed course material. *|

If the contract specifies concrete to bed the pipe, the *|
Contractor shall consider the top of the concrete as the top of the *|
bedding. Bedding material includes one: *|

- (a) Concrete. |
- (b) Beach sand. |

(c) No. 8 or No. 67 aggregate conforming to the gradation requirements of ASTM C33.

(d) Native free-draining granular material having a minimum sand equivalent of thirty (30) or having a coefficient of permeability greater than 0.001 centimeter per second.

(e) Other material accepted by the Engineer.

(3) Sheathing and Bracing.

(a) **General.** The Contractor shall furnish, place and maintain such sheathing and bracing required to support the excavation.

(b) **PVC Pipe.** If the Contractor uses timber sheathing below the top of pipe, the Contractor shall drive the timber sheathing approximately two (2) feet below the bottom of the pipe. The Contractor shall leave the timber sheathing in place about one and a half (1-1/2) feet above the top of pipe.

(c) **Movable Trench Sheeting, Trench Boxes Or Shields.** If the bottom of the shoring, shield or box extends below the top of the pipe, movable trench supports should only be used in wide trench construction either:

(a) on a shelf above the pipe with the pipe installed in a narrow, vertical-wall subditch or

(b) located at least two and a half (2-1/2) pipe diameters away from flexible pipe

unless the Contractor can show a satisfactory means of reconsolidating the bedding or side support material disturbed by shoring removal.

(4) Dewatering of Trenches. The Contractor shall keep drainage or seepage water below the level of the subgrade:

(a) when the Contractor installs pipe, cradles or jackets;

(b) during periods of inspection of the construction work or

(c) during leakage tests.

The Contractor shall consider the subgrade the bottom of the concrete blocks or jacket. The Contractor shall furnish and have on the work site the necessary pumping equipment. The Contractor shall not damage public or private property while disposing the water. The Contractor shall arrange with the owner for the disposal of seepage water through private property. If the Contractor pumps water across the street, the Contractor shall protect passing vehicles from this water by suitable bridges or other accepted facilities.

(B) Installation of Sewer Pipe.

(1) General. Laying of pipe shall commence at the lowest point. *|
 The spigots shall face the direction of flow. The Contractor shall *|
 fit and match the pipe together so that when laid, the pipe shall *|
 form a sewer true to line and grade with smooth and uniform invert. *|

The Engineer will not permit the use of blocks and wedges to *|
 adjust the pipe to proper line and grade except as required for *|
 jackets and cradles. The Contractor shall support the pipe *|
 uniformly for its entire length.

The Contractor shall close exposed ends of sewers with *|
 accepted temporary covers before leaving the work for the night. If *|
 water, mud or other foreign matter enters the joints after the *|
 Contractor installs the pipe, the Contractor shall: *|

- (a) open the affected joints, *|
- (b) thoroughly clean the affected joints, and *|
- (c) replace the affected joints. *|

The Contractor shall check the pipes that become submerged in *|
 water during the night carefully each morning. The Contractor shall *|
 relay the pipes found "floated" from their proper positions at no *|
 cost to the State. Before final inspection, the Contractor shall *|
 inspect the lines visually. The Contractor shall remove mud and *|
 other foreign matter within the line. *|

(2) Installation of Vitrified Clay Pipe. The Contractor shall *|
 install the vitrified clay pipe with compression joints. The *|
 Contractor shall wipe or brush the pipe with accepted lubricant or *|
 adhesive furnished by the pipe manufacturer on the contact surfaces *|
 of the joint. The Contractor shall push the spigot into the bell *|
 until the joint snaps into position.

The Engineer will not permit poured or formed joints using *|
 cement, sulfur compounds, bituminous materials or other materials *|
 forming a rigid joint. *|

The use of an accepted "Jointing Compound for Sewer Pipe" is *|
 acceptable for joining the six (6) inch by four (4) inch extra *|
 heavy cast iron or ductile iron reducer to a six (6) inch vitrified *|
 clay sewer pipe to receive a four (4) inch house sewer.

(3) Installation of Cast Iron and Ductile Iron Pipe and
Appurtenances. Installation of cast iron and ductile iron pipe and
 appurtenances shall be according to Subsection 624.03(D) - Laying *|
 Pipe and 624.03(F) - Joints for Cast Iron and Ductile Iron Pipe and
 Appurtenances.

(4) **Installation of Reinforced Concrete Sewer Pipe.** The Contractor shall clean the inside surface of the concrete bell and the concrete spigot end including the groove thoroughly before the Contractor makes the joint. The Contractor shall lubricate the rubber gasket and the annular groove in the spigot thoroughly. The Contractor shall then stretch and place the gasket uniformly in the annular groove in the spigot. The Contractor shall lubricate the inside bell surface two (2) inches from the end of the pipe. The lubricant shall be a soft vegetable soap compound or accepted equal.

Before assembling the joint, the Contractor shall place the metal or wooden spacers against the shoulder of the bell and provide the proper space between abutting ends of the pipe.

The Contractor shall telescope the spigot into the bell and brought home. The Engineer will not permit mortaring of joints, inside or outside.

After the Contractor assembles the joint, the Contractor shall insert the a thin metal feeler gauge between the bell and the spigot. The Contractor shall check the position of the rubber gasket around the complete circumference of the pipe. If the gasket is not in the proper position, the Contractor shall:

- (a) withdraw the pipe,
- (b) check the gasket for cuts and damages,
- (c) relay the pipe, and
- (d) recheck the gasket position.

Joint openings shall:

- (a) be within the tolerance recommended by the manufacturer,
- (b) be consistent with the design of the pipe, and
- (c) not exceed half (1/2) an inch.

If the joint opening exceeds these requirements, the Contractor shall withdraw the pipe, correct the defect, and relay the pipe.

(5) **Installation of PVC Pipe.** The Contractor shall wipe and lubricate the compression joints clean and thoroughly with lubricant provided by the manufacturer and as ordered before the Contractor inserts the spigot end of the pipe into the bell end.

Because of the nature of plastic pipe and fittings, the Contractor shall handle, load, unload, and store the PVC pipe with care. The Contractor shall store the pipe and fittings under

cover. The Contractor shall transport the pipe and fittings in a vehicle with a bed long enough to allow the length of pipe to lay flat. The Engineer will not accept defective pipe.

The Contractor shall first place the bedding material to support the pipe for the full length of the barrel with full bearing on the bottom segment of the pipe equal to a minimum of 0.4 times the outside diameter of the barrel. If the Contractor lays the pipe in a rock excavation, the Contractor shall remove the rocks within six (6) inches of the sewer pipe horizontally. The Contractor shall place at least four (4) inches of bedding below the pipe.

The Contractor shall cover the plastic pipes with a minimum of three (3) inches of accepted backfill material within twenty-four (24) hours after the Contractor places the plastic pipe in the trench.

The Engineer will permit compaction of the bedding from the bottom of the pipe to twelve (12) inches above the pipe barrel by jetting provided the applied water will not soften or damage the foundation material. The Engineer will not permit flooding or ponding methods of getting the required relative density. The size and length of jet pipe, quantities and pressure of water, and jetting locations shall be sufficient to compact the bedding to eighty-seven (87) percent minimum relative density. Compaction of the backfill from twelve (12) inches above the pipe barrel to the finish surface shall conform to Section 206 - Excavation and Backfill for Conduits and Structures.

The Engineer will require special watertight manhole couplings required for manhole connections. The Contractor may cast the couplings directly into cast-in-place manholes or grout the couplings into precast concrete manholes with non-shrink or expansion-type grout.

(6) Leakage Tests for Sewers.

(a) General. The Contractor shall test the sewers and sewer manholes for leakage. The Contractor shall furnish and install equipment and material necessary for tests including water and labor at no cost to the State. The Contractor shall test in the presence of the Engineer. The Contractor shall not place backfill, concrete cradles, concrete jackets, or permanent resurfacing until the Contractor does the leakage test and the Engineer accepts the result.

(b) Force Mains. The Contractor shall test the force mains according to Subsection 624.03(K) - Tests.

(c) Gravity Lines. If the difference in elevation between *|
 inverts of adjacent structures (manholes) exceeds ten (10) feet *|
 the Engineer will not require exfiltration leakage test. *|

If the ground water is above the top of the pipe laid, the *|
 Contractor shall test the pipe for infiltration as follows: *|

1. After the Contractor lays the pipe and completes *|
 connecting the manholes, the Contractor shall backfill the *|
 pipe trench sufficiently to prevent "floating" of pipe. *|

2. The Contractor shall close the end of the sewer at the *|
 upper structure sufficiently to prevent the entrance of *|
 water. The Contractor shall stop the pumping of ground *|
 water for at least three (3) days after which the *|
 Contractor shall test the test portion for infiltration. *|

3. The maximum quantity of infiltration shall not exceed
 two hundred (200) gallons per day per inch of inside
 diameter per mile of pipe.

4. The Contractor shall reduce the infiltration over the *|
 limit specified above to within the permissible limit *|
 before the Engineer accepts the sewer. The Contractor *|
 shall repair visible leaks, despite the limits of the *|
 leakage tests. *|

If the ground water is below the top of the pipe laid, the *|
 Contractor shall do the leakage (exfiltration) tests as *|
 follows: *|

1. The Contractor shall test each portion of sewer *|
 between successive manholes by closing: *|

a. the lower end of the sewer that the Contractor *|
 will test and *|

b. the inlet sewer of the upper manholes with *|
 stoppers. *|

The Contractor shall fill the pipe and manhole with *|
 water: *|

a. at least four (4) feet above the invert of the *|
 sewer at the center of the manhole or *|

b. not less than one (1) foot above the high end of *|
 the highest house connection on the portion the *|
 Contractor is testing. *|

2. If the Contractor desire to delay the building of the manhole, the Contractor may use a barrel on the bank to provide the necessary pressure required for testing. *

3. The Contractor shall keep the water present in the trench below the level of the subgrade of the sewer during the: *

a. test and *

b. patching or repairs required by the test. *

4. The maximum quantity of leakage under test shall not exceed the rate of two hundred (200) gallons per day per inch of diameter of pipe per mile of pipe. |

5. The Contractor shall reduce the exfiltration over the limit specified above to within the permissible limits. The Contractor shall repair visible leaks despite the limits of the leakage tests. *

(d) Low Pressure Air Test

(1) The Contractor shall clean the pipe that the Contractor will test. *

(2) The Contractor shall plug pipe outlets with suitable test plugs. The Contractor shall brace each plug securely. *

(3) The Contractor shall add air until the Contractor raises the internal pressure of the line to approximately four (4) pounds per square inch. After the Contractor reaches this pressure, the Contractor shall allow the pressure to stabilize. The pressure will normally drop as the air temperature stabilizes. This usually takes two (2) to five (5) minutes depending on the pipe size. The Contractor may reduce the pressure to three and a half (3-1/2) pounds per square inch before starting the test. *

(4) The Contractor shall start the test when the pressure: *

a. has stabilized and |

b. is at or above the starting test pressure of three and a half (3-1/2) pounds per square inch. |

If the pressure does not drop more than one (1) pound per square inch during the test time, the line has passed the test. *

(5) Ground water above the pipe will reduce air loss. If the section of line under test shows significant infiltration, the Engineer will require an infiltration test. *

(6) **Safety.** The air test may be dangerous if the Contractor prepares a line is improperly. The Contractor shall install and brace the various plugs to prevent blow outs. An internal pressure of five (5) pounds per square inch on an eight (8) inch plug can exert a force of two hundred and fifty (250) pounds. Sudden expulsion of a poorly installed plug or of a plug that the Contractor deflates partially before the Contractor releases the pipe pressure can be dangerous. *

As a safety precaution, pressurizing equipment should include a regulator set at perhaps ten (10) pounds per square inch to avoid over-pressurizing and damaging an acceptable line. The Contractor shall not allow workers in the manholes during testing. *

(7) **Mandrel Test for Deflection of PVC Pipe.** The Contractor shall do a mandrel test thirty (30) days after the Contractor completes the trench backfill. In roadway areas, the thirty (30) day period shall begin after installation and compaction of bedding, backfill and subbase to within two (2) feet of the finished pavement grade. *

The Contractor shall pull a rigid nine (9) sled mandrel through the pipe by hand between adjacent manholes to measure for obstructions such as deflections, joint offsets and lateral pipe intrusions. The mandrel shall have a cross section equivalent to a circle having a diameter at least ninety-five (95) percent of the average inside diameter of the pipe. The minimum length of the circular portion of the mandrel shall be equal to the nominal diameter of the pipe. The Contractor shall do this test in the presence of the Engineer. The Contractor shall provide the material, equipment and labor required to do the test at no cost to the State. *

If the mandrel fails to pass, the Engineer will consider the pipe overdeflected. If not damaged, the Contractor shall uncover and reinstall the overdeflected pipe. The Contractor shall remove the damaged pipe from the work site. The Engineer will not permit rerounding or other method or process to reduce or cure overdeflections. *

Nominal Pipe Size Inches	Mandrel Diameter (Min.) Inches
6	5.60
8	7.50
10	9.37
12	11.15

TABLE 625-II - MINIMUM AIR TEST TIME FOR VARIOUS PIPE SIZES

Nominal Pipe Size, inches	T (Time) min/100 ft	Nominal Pipe Size, inches	T (Time) min/100 ft
3	0.2	21	3.0
4	0.3	24	3.6
6	0.7	27	4.2
8	1.2	30	4.8
10	1.5	33	5.4
12	1.8	36	6.0
15	2.1	39	6.6
18	2.4	42	7.3

(8) Connections to Existing Sewers.

(a) **General.** The Contractor shall arrange with the respective *
County Division of Sewers for making connections to existing *
sewers.

(b) **Breaking into Existing Manholes.** The Contractor shall *
connect to existing manholes and channelization of inverts in *
the presence of an inspector from the respective County *
Division of Sewers. In making the connection, the Contractor *
shall place a tight fitting false form on the inside portion *
of the manhole. The Contractor shall be responsible for *
removing materials falling inside the existing sewer pipe and *
for damages to the existing manhole and sewer pipe during this *
work. After the Contractor completes the connection, the *
Contractor shall work on the required channelizing within the *
existing manhole.

(c) **Sewer Enclosed Within a New Manhole.** If the Contractor *| builds a new manhole over an existing sewer main, the *| Contractor shall cut the existing sewer line in the presence of *| an inspector from the respective County Division of Sewers. The *| Contractor shall do the work only after the Contractor clears *| the new manhole of mud, debris and standing water. |

(d) **Saddle Wye.** If the Contractor requires to install a new *| lateral from an existing sewer main, the Contractor will do the *| saddle "Y" tap-in in the presence of an inspector from the *| respective County Division of Sewers. The Contractor shall *| furnish the saddle "Y". *|

(C) **Trench Backfill.** The Contractor shall not place the backfill until *| the Contractor has tested the pipe and appurtenances and the test *| accepted. After the Contractor installs and tests the pipe, the *| Contractor shall promptly backfill the trench and around the manhole. The *| Contractor shall backfill the trench according to Section 206 - *| Excavation and Backfill for Conduits and Structures.

If the Contractor uses and pulls out the sheathing, the Contractor *| shall fill and tamp the cavities formed below the invert grade solidly *| before proceeding with the backfill of the trench if the nature of the *| material penetrated by the sheathing warrants this precaution.

The Contractor shall place and tamp the trench backfill material *| placed below a horizontal plane twelve (12) inches above the top of the *| pipe by hand shoveling so that the backfill material is in contact with *| the entire periphery of the pipe. Materials shall conform to Subsection *| 703.21(A) - Trench Backfill Material A.

The Contractor shall backfill the remainder of the trench with *| structure backfill material according to Subsection 703.20(B) - Structure *| Backfill Material B or with trench backfill material according to *| Subsection 703.21(B) - Trench Backfill Material B.

For sewer pipes that the Contractor cradles, the Contractor shall *| bring the initial backfill up to the top of the barrel of the pipe, *| moisten and thoroughly tamp.

In lawns, gardens and other cultivated areas, the Contractor shall *| backfill the upper twelve (12) inches with planting soil or loam that the *| Contractor shall tamp thoroughly. The Contractor shall then plant grass, *| reset plants and shrubs and irrigate the area for seven (7) days.

(D) **Concrete Blocks.** The Contractor shall place concrete blocks required *| by the contract or ordered next to each bell on both pipe and fittings. *|

(E) **Concrete Cradle.** The Contractor shall install the concrete cradle *| under the entire length of the pipe according to the contract. Before *| placing the concrete, the pipes shall rest firmly on concrete blocks. *| The Engineer will not require keyway or curing. The Contractor shall *| install reinforcement if specified and shall space the reinforcement *| shown in the contract. |

(F) **Crushed Rock Cradle.** If required, the Contractor shall place the crushed rock cradle under the entire length of the pipe up to the height called for in the contract. The Contractor shall place the bed course material in layers not exceeding eight (8) inches in loose thickness and compact.

(G) **Concrete Jackets.** If required, the Contractor shall place the concrete jackets and construct to the dimensions shown in the contract. The Contractor shall use small concrete blocks to support the pipes and, if required, reinforcing steel.

The Contractor shall furnish and install reinforced steel in reinforced concrete jackets according to the contract.

The Contractor shall cure the reinforced concrete jackets for five (5) days. The Engineer will not require curing for plain concrete jackets.

(H) **House Sewer Connection.** The Contractor shall arrange the connections to cause the least inconvenienced for the sewer user.

(I) **Removing or Abandoning Existing Sewer System.** If requested by the Engineer, the Contractor shall expose portions of existing sewer pipe that the Contractor will remove or abandon. Such excavation shall be according to Subsection 625.03(A) - Open Trench Excavation for Sewer Pipes.

If the Contractor finds the top of the pipe to be less than twenty-four (24) inches below the finished grade and the Engineer orders the pipe removed, the Contractor shall proceed with the pipe removal work. The exact position of cutting for removal shall be as ordered by the Engineer.

After the Contractor cuts the pipe and before backfilling the open trench, the Contractor shall plug the open end of abandoned pipes that the Contractor will not remove tightly with Class B Concrete. The Contractor shall plug the end of the existing pipe to remain in use with vitrified clay cap.

The Contractor shall then backfill the open trench with accepted selected material and tamp thoroughly in uniform horizontal layers not exceeding eight (8) inches in loose thickness with appropriate backfill tampers to a relative compaction of not less than ninety-five (95) percent.

The Contractor shall clean and deliver the materials that the Contractor will return to the locations as ordered by the Engineer.

625.04 Method of Measurement. The Engineer will measure trench excavation and backfill for pipes according to Section 206 - Excavation and Backfill for Conduits and Structures. The contract will specify those widths of trenches for computation of quantities according to Subsection 625.03(A)(1) -Widths of

Trenches. Trench excavation and backfill will include excavations ordered by the Engineer for the uncovering and/or removal of existing sewers and removal and hauling of unsuitable material.

The Engineer will measure sewer pipes of the respective type, class and size horizontally by the linear foot in place between inside face of manholes. If the grade exceeds ten (10) percent, the Engineer will measure the actual length of pipe installed. At drop manholes, the Engineer will measure sewer mains to the outside face of drop shown in the contract.

The Engineer will measure laterals by the linear feet from the end of the reducer to the centerline of the main less half the specified trench width for sewer main at that point. The Engineer will measure extending existing six (6) inch laterals horizontally by the linear foot from the end of the existing lateral to the new highway right-of-way line.

The Engineer will measure wyes, bends and reducers with caps per each.

The Engineer will measure redwood or one and a half (1-1/2) inch diameter PVC pipe markers per each.

The Engineer will measure chimneys for by the linear feet from the crown of sewer to the top of the uppermost chimney wye or to the top of the double wye.

The Engineer will measure cast iron and ductile iron pipe and appurtenances under Section 624 - Water System.

The Engineer will measure plain (non-reinforced) and reinforced concrete cradle and jacket for the various type and size of pipe horizontally by the linear foot in place. If the grade exceeds ten (10) percent, the Engineer will measure the actual length of cradle and jacket installed. At drop manholes, the Engineer will measure cradles and jackets to the outside face of drop shown in the contract.

The Engineer will measure bed course material for crushed rock cradle by the linear foot or cubic yard in place, as specified in the proposal.

The Engineer will not measure concrete blocks.

The Engineer will measure drop connection and shallow drop connections at sewer manholes by the linear foot from invert to invert shown in the contract.

The Engineer will measure connecting house sewers per each complete in place.

625.05 **Basis of Payment.** The Engineer will pay for the accepted quantities *|
of trench excavation and backfill for pipes according to Section 206 - *|
Excavation and Backfill for Conduits and Structures. The price shall be full |
compensation for connecting to existing sewers, cutting and plugging existing |
sewer pipes, and furnishing labors, materials, and equipment, tools, |
incidentals, and incidentals necessary to complete the work. |

The Engineer will pay for the accepted quantities of sewer pipe at the *|
contract price per linear foot complete in place. The price shall be full *|
compensation for furnishing, installing, and testing pipes; connecting to *|
existing sewers, and furnishing labors, materials, equipment, tools, and *|
incidentals necessary to complete the installation of the pipe items. |

The Engineer will pay for the accepted quantities of laterals and *|
extending six (6) inch laterals at the contract price per linear foot *|
complete in place. The price shall be full compensation for excavating and *|
backfilling, furnishing and installing six (6) inch pipe, removing and |
relocating existing cleanout, furnishing and installing a new cleanout, |
reconnecting house sewer, and furnishing labors, materials, equipment, tools, |
and incidentals necessary to complete the work. |

The Engineer will pay for the accepted quantities of wyes, bends and *|
reducers with caps at the contract price per each. The price shall be full *|
compensation for the furnishing and delivering only. The Contractor shall |
include the installation and other necessary labor, material and equipment in *|
the price for pipe laying. |

The Engineer will pay for the accepted quantities of markers at the *|
contract price per each. The price shall be full compensation for each *|
marker complete in place. |

The Engineer will pay for the accepted quantities of cast iron and *|
ductile iron pipe and appurtenances under Section 624 - Water System. *|

-The Engineer will pay for the accepted quantities of plain and *|
reinforced concrete cradle and plain and reinforced concrete jacket at the *|
contract price per linear foot complete in place. The price shall be full *|
compensation for furnishing and installing cradles and jackets, concrete and *|
reinforcing steel, and furnishing equipment, tools, labor, materials and *|
incidentals necessary to complete the work. |

The Engineer will pay for the accepted quantities of bed course *|
materials for crushed rock cradle at the contract price per linear foot or *|
cubic yard complete in place. The price shall be full compensation for *|
furnishing labors, materials, tools, equipment and incidentals necessary to *|
complete the work. |

The Engineer will not pay for concrete blocks. The Engineer will *|
consider them incidental to the various contract items. *|

The Engineer will pay for the accepted quantities of drop connection *|
for drop sewer manholes for each size and shallow drop connections at sewer |

manholes at the contract price per linear foot complete in place. The price *| shall be full compensation for furnishing and installing of chimney and cast iron frame and covers and furnishing materials, labors, equipment, tools and incidentals necessary to complete the work. |

The Engineer will not pay for cutting and plugging of abandoned sewers, *| furnishing and placing concrete plugs for the ends of abandoned sewers and vitrified clay caps at the ends of existing sewers that will remain in use. | The Engineer will consider them incidental to the various contract items. |

If shown for in the proposal, the Engineer will pay for the accepted *| quantities of connecting house sewers at the contract price per each complete *| in place. The price shall be full compensation for furnishing labors, | materials, tools, equipment and incidentals necessary to complete the work. |

The Engineer will make payment under: *

Pay Item	Pay Unit
_____ - Inch, Sewer Pipe	Linear Foot
Laterals	Linear Foot
Extending Six (6) Inch Sewer Laterals	Linear Foot
_____ - Inch, Wye	Each
_____ - Inch, Bend	Each
_____ Reducer with Cap	Each
Marker	Each
_____ Concrete Cradle for _____ - Inch (_____ Pipe)	Linear Foot
_____ Concrete Jacket for _____ - Inch (_____ Pipe)	Linear Foot
Bed Course Material for Crushed Rock Cradle	Linear Foot
Bed Course Material for Crushed Rock Cradle	Cubic Yard
_____ - Inch, Drop Connection at Sewer Manhole	Linear Foot
_____ - Inch, Shallow Drop Connection at Sewer Manhole	Linear Foot
House Sewer Connection	Each

SECTION 626 - (Reserved)

SECTION 627 - (Reserved)