

**SECTION 33114
ABANDON AND DEMOLISH PUMP STATION**

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PART 1 - GENERAL

1.1 SCOPE

- A. This section of the specification describes those activities to be performed by the contractor to decommission and abandon the St. Marlo Pumping Station No. 2. The contractor shall furnish all products, equipment, and labor to fulfill the requirements of this specification. The work includes safe and secure abandonment of the facility including plugging pipeline/sewer, capping manholes, installing slabs and final grading of the site.

1.2 REFERENCE STANDARDS

- A. All work shall be finished to lawn, garden, and golf course standard.

1.3 OPTIONS

- A. None.

1.4 QUALITY ASSURANCE

- A. All work shall be completed to the satisfaction of Forsyth County Department of Water and Sewer (FCDWS), the golf course personnel and the Engineer.

PART 2 - PRODUCTS

2.1 SELECT BACKFILL AND CONCRETE

- A. Provide concrete, crushed stone, soil, fill dirt, and sod to provide a finished site suitable for use as lawn, garden or golf course fairway.

PART 3 - EXECUTION

3.1 ON-SITE OBSERVATION

- A. The Engineer shall have the right to require that any portion of the work be done in his presence and if any work is covered up after such instruction, it shall be exposed by the Contractor for observation. However, if the Contractor notifies the Engineer that such work is scheduled and the Engineer fails to appear within 48 hours, the Contractor may proceed without him.
- B. All work done and materials furnished shall be subject to review by the Engineer or Project Representative. All improper work shall be reconstructed and all materials which do not conform to the requirements of the specifications shall be removed from the work upon notice being received from the Engineer for the rejection of such work or materials. The Engineer shall have the right to mark rejected materials so as to distinguish them as such.
- C. The Contractor shall give the Project Engineer or project representative a minimum of 48 hours' notice for all required observation or tests.

- D. The Contractor is required to keep accurate, legible records of the location of all sewer lines, laterals, manholes, fittings, and appurtenances. These records will be prepared in accordance with the paragraph on “Record Data” in the Supplementary Conditions. Final payment to the Contractor will be withheld until all such information is received and accepted.

3.2 FIELD WORK

A. Abandonment and Demolition of Pump Station

Include the following items in the lump sum cost for abandonment and demolition of the existing pump station. Contractor responsible for sequence of construction so as to provide uninterrupted service to FCDWS customers. The contractor shall maintain golf course access at all times.

1. Install Dick Creek sanitary sewer from existing SSMH 954/proposed SSMH-15 to existing SSMH 16676/proposed SSMH- 2. Test and TV installed sewer. Obtain acceptance from FCDWS, then put in service.
2. Coordinate with power company to disconnect electricity. Remove transformer and pad.
3. Coordinate with gas company to turn off service, plug line, and remove meter to gas company standards.
4. Coordinate with FCDWS and remove water service to FCDWS standards.
5. Dismantle and remove all SCADA equipment and transport equipment to FCDWS shops.
6. Abandon manhole(s) upstream of wet well. Remove manhole structure to a level not less than four feet below grade. Securely plug inlet and outlet pipes. Cut and plug inlet and outlet pipes outside the manhole. Fill manhole with cement-stabilized sand or #57 stone. Cover with top soil to grade with lawn or golf course fairway finish.
7. Clean wet well, remove, and dispose of all debris in a sanitary landfill and provide disposal manifest to FCDWS.
8. Dismantle and remove all pumps, motors, couplings, valves, and controls from the valve vault and wet well and other appurtenances above finished grade. Return all equipment and salvageable parts to the owner including, but not limited to, pumps, main control cabinet, transfer switch, transformer, a/c unit, TVSS panel, breaker panel, utility light pole, interior and exterior light fixtures, RPZ, hot box, fuel tank and generator. Equipment to be delivered by contractor to county maintenance facility.
9. Fill wet well structure with cement-stabilized sand or #57 stone to within 2 feet of the top of the structure. Add concrete cap 2' thick.
10. Dismantle and remove the existing fence.
11. Overlay existing slab and wet well cap with 3” of 4,500 PSI fiber reinforced concrete slab as shown on the plans and broom finish.
12. Cap or plug existing force main downstream as shown. Encase cap or plug in concrete.

13. Abandon force main emergency connection and valve by removing valve and pipeline to 24" below final grade.
14. Pavement and concrete repair or replacement shall match the existing section.
15. Grass, sod, and restore the disturbed area to match surroundings.
16. Maintain existing concrete drive. Repair/replace if damaged during construction.
17. All remaining equipment becomes property of contractor for removal from site and proper disposal.
18. Contractor may use existing pump station's effluent force main for pump around service until such time as the gravity sanitary sewer is in service.
19. The Contractor shall leave the access road or cart path to the pump station and golf course in pre-project condition.

3.3 CONSTRUCTION ALONG HIGHWAYS, STREETS, AND ROADWAYS

Install pipelines and accessories along highways, streets, and roadways in accordance with the applicable regulations of the County, City, and/or the Department of Transportation with reference to construction operations, safety, traffic control, road maintenance, and repair.

- A. Protection of Traffic: Provide and maintain suitable signs, barricades, and lights for protection of traffic.

Replace all highway signs removed for construction as soon as possible. Do not close or block any highway, street, or roadway without first obtaining permission from the proper authorities.

Provide flagmen to direct or expedite the flow of traffic.

- B. Construction Operations: The Contractor shall construct all work along highways, streets and roadways using the following sequence of construction operations, so as to least interfere with traffic.

1. Stripping: Where pipeline is laid along the road shoulders, sod, topsoil, and other material suitable for shoulder restoration shall be stripped and stockpiled for replacement.
2. Trenching, Laying and Backfilling: Do not open the trench any further ahead of pipe laying operations than is necessary. Backfill and remove excess material immediately behind laying operations. Complete excavation and backfill for any portion of the trench in the same day.
3. Shaping: Reshape damaged slopes, side ditches and ditch lines immediately after completing backfilling operations. Replace topsoil, sod and any other materials removed from shoulders.

- C. Excavated Material: Excavated material shall not be placed along highways, streets, and roadways in such a manner as to obstruct traffic. Roadways and pavement will be maintained free of earth material and debris.

- D. Drainage Structures: All side ditches, culverts, cross drains and other drainage structures shall be kept clear of excavated material and be free to drain at all times.
- E. Maintaining Highways, Streets, Roadways and Driveways
 1. The Contractor shall furnish a road grader which shall be available for use at all times for maintaining highways, streets, and roadways.
 2. All such streets, highways, and roadways shall be maintained in suitable condition for the movement of traffic until completion and final acceptance of work.
 3. Repair all driveways that are cut or damaged. Maintain them in suitable condition until completion and final acceptance of work.
 4. Use steel running plate to maintain traffic until pavement replacement is completed.

NOTE: Traffic must be maintained at all times. When one lane is closed, flagmen must be utilized to maintain traffic flow.

Repair all driveways that are cut or damaged immediately. Maintain them in a suitable condition for use until completion and final acceptance of the work.

3.4 EXISTING UNDERGROUND UTILITIES AND CONSTRUCTION

- A. The Contractor is responsible for locating all existing utilities along the path of his construction. The drawings shall indicate underground utilities or obstructions that are known to exist. Where these or unforeseen underground utilities are encountered, the location and alignment of the pipe may be changed, upon written approval of the Engineer and Owner, to avoid interferences.

3.5 CONNECTIONS TO EXISTING PIPELINES

- A. Before laying pipe, the Contractor shall locate the points of connection to existing pipelines and uncover as necessary for the Engineer and Owner to confirm the nature of the connections to be made. The Contractor shall furnish materials and make the connection to all existing pipelines. The Contractor will be observed during construction of tie-ins by the Owner and the Engineer. The Contractor shall use all available practices and resources to minimize the time the customers are without sanitary sewer services. The Contractor shall notify the affected customers of a sanitary sewer service outage at least 24 hours in advance.

3.6 PIPE DISTRIBUTION

- A. Pipe shall be distributed and placed in a manner that will not interfere with traffic.
- B. NOT USED.

3.7 LOCATION AND GRADE

- A. The drawings show the location and grade of the gravity sewer and the position of the manholes and other appurtenances. The slope shown on the gravity sewer profile and/or called for in the Specifications is the slope of the invert of the pipe.
- B. After the contractor located and marks the manhole centerlines or baselines of the gravity sewer, the Contractor shall perform clearing and grubbing.

3.8 PIPE INSTALLATION

- A. General – Ductile iron pipe shall be laid in accordance with AWWA C-60 and the pipe manufacturer’s recommendations
- B. Construction Methods:
 - 1. Install piping by trenches unless horizontal directional drilling or jack and boring are shown on the Drawings.
 - 2. Install piping beginning at low point, true to grades and alignment indicated with unbroken continuity of invert. Place bell ends of piping facing upstream. Install gaskets, seals, sleeves, and couplings according to manufacturer's written instructions for using lubricants, cements, and other installation requirements.
 - 3. Install manholes and reducers at locations as shown on the Drawings.
 - 4. Casing shall be installed in conformance with FCDWS Standard Specifications Division IV, Section 5.07.
 - 5. Install gravity-flow, non-pressure piping according to the following:
 - a. Install piping pitched down in direction of flow at the slope indicated on Drawings.
 - b. Install ductile-iron, gravity sewer piping according to ASTM A 746.
 - c. Install PVC Type PSM sewer piping according to ASTM D 2321 and ASTM F 1668.
 - 6. Alignment and Grade:
 - a. All pipe shall be laid and maintained in the required lines and grades, with fittings at the required locations and with joints centered.
 - b. Where pipe is laid in roadways and parkways of streets, the top of the barrel of the pipe shall have a minimum cover of 48” below the curb line of the street or where no curb line has been established, below the existing ground line. Where the pipe is laid in open, unsubdivided areas, a minimum of 48” of cover is required. A greater depth of cover is required in certain sections of the main, such as railroad crossings, valve locations and other sections of special construction and within State and Federal highway rights-of-way.
 - c. Prior to excavation, investigation shall be made to the extent necessary to determine the location of existing underground structures and conflicts. Care shall be exercised by the Contractor during excavation to avoid damage to existing structures. The pipe manufacturer’s recommendations shall be used when the water main being installed is adjacent to a facility that is catholically protected.

- d. Unforeseen Obstructions - When obstructions that are not shown on the plans are encountered during the progress of work and interfere so that an alteration of the plan is required, the Engineer will alter the plans or order a deviation in line or grade, or arrange for removal, relocation or reconstruction of the obstructions.
7. Excavation and Preparation of Trench: See Section 312316.13 Trenching
8. Laying of Pipe: the spigot shall be centered in the bell, the pipe forced “home” and brought into true alignment; it shall be secured there by earth, carefully tamped under on each side of it, excepting at all bell holes. Care shall be taken to prevent dirt from entering the joint space. No “blocking up” of pipe joints will be permitted. The joint shall be made as hereinafter described.
 - a. Trench Water Entering Pipe: At times when pipe laying is not in progress, the open ends of the pipe shall be closed by approved means and no trench water shall be permitted to enter pipe.
 - b. Cutting Pipe: Cutting of pipe for inserting valves, fittings or closure pieces shall be done in a neat workmanlike manner without damage to the pipe.
 - c. Bell Ends Face Direction of Laying: unless otherwise directed, pipe shall be laid with bell ends facing in the direction of laying; and for lines on an appreciable slope, bells shall, at the direction of the Engineer, face up-grade.
 - d. Permissible Deflection of Joints: Wherever necessary to deflect pipe for a straight line, either in the vertical or horizontal plane to avoid obstructions, the degree of deflection shall be according to the manufacturer’s recommendations.
 - e. Unsuitable Conditions for Laying Pipe: No pipe shall be laid in water, or when trench conditions or the weather is unsuitable for such work.
9. Jointing Pipe – Mechanical Joints: the following steps shall be taken in the making of mechanical joints.
 - a. All lumps, blisters, and excess coal-tar enamel shall be removed from socket and spigot of the pipe.
 - b. Wash socket and plain end with soapy water containing chloride solution: then slip gland and gasket over the plain end. The small site of the gasket and lip gland shall face bell.
 - c. Paint gasket with soapy solution.
 - d. Push gasket into position, being sure it is evenly seated in socket.
 - e. Slide gland into position; insert bolts and run nuts up finger tight.
 - f. Tighten bolts to uniform tightness with correct ratchet wrench. The first bolt tightened shall be the bottom bolt, then top. All other bolts shall be tightened in sequence at 180 degrees apart.
10. Backfilling, Clean Up and Maintaining Surfaces - See Section 312316.13 Trenching

3.9 CONNECTION TO AN EXISTING MANHOLE

- A. Connection to an existing manhole shall be made by replacing the base section of the existing manhole with a new precast base section that has inverts pre-constructed to match the proposed sewer alignment.

3.10 CONNECTION AND REPAIR TO EXISTING SEWER MAIN

- A. Where connections and repairs are required, Contractor shall only use solid sleeves, provide all materials, and labor necessary to make the connection or repair to the existing pipeline.

3.11 PROTECTION AND RESTORATION OF WORK AREA

- A. General: Return all items and all areas disturbed, directly or indirectly by work under these Specifications, to their original condition or better, as quickly as possible after work is started.
 - 1. The Contractor shall plan, coordinate, and prosecute the work such that disruption to personal property and business is held to a practical minimum.
 - 2. All construction areas abutting lawns and yards of residential or commercial property shall be restored promptly. Backfilling of underground facilities, ditches, and disturbed areas shall be accomplished on a daily basis as work is completed. Finishing, dressing and grassing shall be accomplished immediately thereafter, as a continuous operation within each area being constructed and with emphasis places on completing each individual yard or business frontage. Care shall be taken to provide positive drainage to avoid ponding or concentration of runoff.
 - 3. Handwork, including raking and smoothing, shall be required to ensure that roots, sticks, rocks and other debris are removed in order to provide a neat and pleasing appearance.
- B. Man-Made Improvements: Protect or remove and replace with the Owner and or Engineer's approval, all fences, walkways, mail boxes, pipelines, drain culverts, power and telephone lines and cables, property pins and other improvements that may be encountered in the work.
- C. Cultivated Growth: Do not disturb cultivated trees and shrubbery unless approved by Owner and or Engineer. Any such trees or shrubbery which must be removed shall be heeled and replanted under the direction of an experienced nurseryman.
- D. Cutting of Trees: Do not cut for the performance of the work except as absolutely necessary. Protect trees that remain in the vicinity of the work from damage and equipment. Do not store spoil from excavation against the trunks. Remove excavated material stored over the root system of trees within 30 days to allow proper natural watering of the root system. Repair any damaged tree over 3-inches in diameter, not to be removed, under the direction of an experienced nurseryman. All trees and brush that require removal shall be promptly and completely removed from the work area and disposed of by the Contractor. No stumps, wood piles, or trash piles will be permitted on the work site.

- E. Disposal of Rubbish: Dispose of materials cleared and grubbed during the construction of the project in accordance with the applicable codes and rules of appropriate city and or county, state and federal regulatory agencies.

- F. Swamps and other Wetlands:
 - 1. The contractor shall not construct permanent roadbeds, berms, drainage structures or any other structures which alter the original topographic features within the easement.

 - 2. All temporary construction or alterations to the original topography will incorporate measures to prevent erosion into the surrounding swamp or wetland. All areas within the easement shall be returned to their original topographic condition as soon as possible after work is completed in the area. All materials of construction and other non-native materials shall be disposed of by the Contractor.

 - 3. The Contractor shall provide temporary culverts or other drainage structures, as necessary, to permit the free migration of water between portions of a swamp, wetland or stream which may be temporarily divided by construction.

 - 4. The Contractor shall not spread, discharge or dump any fuel, oil, gasoline, pesticide, or any other pollutant to adjacent swamps or wetlands.

END OF SECTION 331114