

**NATURAL RESOURCES CONSERVATION SERVICE  
CONSERVATION PRACTICE GENERAL SPECIFICATIONS**

**WASTE TRANSFER**

**WASTE TRANSFER PIPELINE**

(No.)

**CODE 634**

**SCOPE**

This specification shall consist of the site preparation, excavation, backfill, concrete, forms, reinforcing steel, pipe, fittings, other appurtenances and services required for the construction of waste transfer structures and the disposal of all cleared and excavated materials. Included in this specification, is furnishing, assembling, and installing all components for conveying wastes or waste byproducts from the agricultural production site to storage/treatment or application as shown on the drawings. Details of construction shown on the drawings but not included herein are considered as part of this specification. Construction shall be conducted in such a manner that erosion, water, air, and noise pollution will be minimized and held within legal limits as established by state and federal regulations, including AgPDES and NPDES permits.

All structures shall be constructed according to plans furnished by the Natural Resources Conservation Service (NRCS) and in accordance with the NRCS's engineering standards for these practices, as well as local building codes, state laws and regulations and current industry standards. Any deviation from the approved drawings and specifications must be approved by the engineer prior to construction.

**PUBLIC AND PRIVATE UTILITIES**

Utilities are defined to be public or private, overhead and underground power or communication lines, and any pipelines. The landowner/operator/contractor shall conduct their own search and discovery for utilities in order to lessen or avoid potential damages, injuries or loss of life. Prior to construction, the owner/operator should complete an OK-ENG-45 UTILITIES INVENTORY & CONSTRUCTION RELEASE FORM to document known utilities in order to comply with State law prior to any ground disturbance and return it to a USDA-NRCS representative.

**QUALITY CONTROL**

Quality Control of all materials and construction procedures is the responsibility of the landowner and contractor. NRCS will make periodic review(s) of the work for the benefit of the agency which will include the final construction check.

**SITE PREPARATION**

The installation area shall be cleared of all trees, logs, stumps, roots, brush, boulders, sod, and rubbish. All stumps, roots, and root clusters having a diameter of one inch or larger shall be grubbed out to a depth of at least two feet below subgrade elevation. The topsoil and sod shall be removed from all excavation, borrow and earthfill areas and stockpiled during construction to be spread on the disturbed areas following construction.

**MATERIALS**

Pipe - The pipe shall be as uniform as commercially practicable in color, opaqueness, density, and other specified physical properties. It shall be free from visible cracks, holes, foreign inclusions, or other defects. The dimensions of the pipe shall be measured as prescribed in ASTM D 2122. All pipe materials used shall conform to the quality and grade noted on the approved plans. Used pipe or

“seconds” shall not be used. The pipe and fittings, where applicable, shall be marked by the manufacturer as described in the applicable ASTM specification. All pipes must meet the designed maximum operating pressure (for both daily use and during cleanout). Pipe and fittings shall be approved by the engineer or his representative prior to installation. All materials shall conform to appropriate ASTM specifications as shown in the following specifications:

<u>Installation Type</u>	<u>Material</u>	<u>Specification</u>
Gravity Flow Pipelines	Polyvinyl Chloride (PVC) Pipe <sup>Note 1</sup>	ASTM F679
		ASTM F794
		ASTM F949
		ASTM D2680
		ASTM D3034
	Polyethylene (PE) Pipe	ASTM F2306
		ASTM F667
		ASTM F894
	High Density Polyethylene (HDPE) Pipe	ASTM D3350
	Acrylonitrile-Butadiene Styrene (ABS) Pipe	ASTM D2680
	Polypropylene (PP) Pipe	ASTM F2736
	Concrete Culvert Pipe	ASTM C76
		ASTM C655
Ductile Iron	ASTM A746	
<i>Any pipe listed below is also acceptable for gravity flow pipelines.</i>		
Pressure Flow Pipelines	Polyvinyl Chloride (PVC) Pipe <sup>Note 1</sup>	ASTM D1785
		ASTM D2241
	Polyethylene (PE) Pipe	ASTM F714
		ASTM D2239
		ASTM D3035
	Acrylonitrile-Butadiene Styrene (ABS) Pipe	ASTM D2235
		ASTM D2969
	Steel Pipe <sup>Note 2</sup>	ASTM A53
		ASTM A134
		ASTM A135
		ASTM A139
	Ductile Iron	ASTM A377 / AWWA C150/C151

Note 1 - PVC pipe material shall be Type 1 (1120/1220) for pressure pipelines

Note 2 - Metal pipes should be coated with asphalt or plastic to retard corrosion, depending upon the type of metal.

Fittings and Joints - Watertight joints having strength equal to that of the pipe shall be used. Pipe, joints, and fittings must meet the designed maximum operating pressure (for both daily use and during

cleanout). Couplers must be of similar material or completely insulated. Manufacturer's installation specifications shall be followed. Fittings and joints shall be of a schedule, SDR or DR, pressure class, external load carrying capacity, or pipe stiffness that equals or exceeds that of the pipe. The dimensions of fittings and joints shall be compatible with the pipe and measured in accordance to the appropriate ASTM. The joints and fittings shall be as uniform as commercially practicable in color, opaqueness, density, and other specified physical properties. It shall be free from visible cracks, holes, foreign inclusions, or other defects. Fittings and joints shall conform to the requirements listed in this specification, the requirements of the applicable specification referenced in the ASTM or AWWA specification for the pipe and the requirements shown on the drawings.

Solvents - Solvents for solvent welded pipe joints shall be compatible with the plastic pipe used and shall conform to the requirements of the applicable specification referenced in the ASTM or AWWA specification for the pipe, fitting, or joint. Joint and fitting material shall be compatible with the pipe material.

Gaskets - Rubber gaskets for pipe joints shall conform to the appropriate ASTM specification for the pipe material used.

Accessories - All valves and appurtenances shall be of adequate capacity and suitable quality to withstand the design pressures and shall be installed in accordance with the manufacturer's recommendations.

## **INSTALLATION**

Trench Excavation – Unless otherwise specified or approved by the engineer, excavation for and subsequent installation of each tube pipeline shall begin at the outlet end and progress upgrade. The trench or excavation for the pipe shall be constructed to the lines, depths, cross sections, and grade shown on the drawings or as staked in the field.

Pipe shall be installed at sufficient depth below the ground surface to provide protection from hazards imposed by traffic crossings, farming operations, freezing temperatures, or soil cracking. In areas where the pipe will not be susceptible to freezing and vehicular or cultivation hazards and the soils do not crack appreciably when dry, the minimum depth of cover shall be 18 inches.

Excavate trenches to ensure that sides will be stable under all working conditions. Slope trench walls or provide supports in conformance with all local and national standards for safety. Open only as much trench as can be safely maintained by available equipment. Backfill all trenches as soon as practicable, but not later than the end of each working day. Where pipes are installed to transfer waste to or from an earthen waste storage facility, the side slopes of the trench shall have a slope no steeper than 1H:1V to allow for adequate compaction. Trenches for plastic pipelines shall be free of rocks and other sharp-edged materials or be bedded with material free of rock.

Laying and Bedding the Pipe – The pipe shall be firmly and uniformly bedded throughout its full length to the depth and in the manner specified on the drawings. Provide a firm, stable, and uniform bedding for the pipe barrel and any protruding features of its joint. Install foundation and bedding as shown on the drawings. Provide a minimum of 4 in. (100 mm) of bedding unless otherwise specified. The minimum bedding depth shall be 6 inches when the pipe will be installed near bedrock. Pipe shall be placed on undisturbed or non-yielding compacted material. For pipe with bell joints, bell holes shall be excavated in the bedding material, as needed, to allow for unobstructed assembly of the joint and to permit the body of the pipe to be in contact with the bedding material throughout its length. Do not lay or embed pipe in standing or running water. At all times prevent runoff and surface water from entering the trench.

Just before placement, each pipe section shall be inspected to ensure that all foreign material is removed from inside the pipe. The pipe ends and the couplings shall be free of foreign material when assembled. At the completion of a work shift, all open ends of the pipeline shall be temporarily closed off using a suitable cover or plug.

Pipe shall be installed to the line and grade shown on the drawings or as staked in the field. Unless otherwise specified, the pipe shall be installed so that there are no reversals of grade between joints, and shall be installed in accordance with the manufacturer's recommendations. Abrupt changes in

grade must be avoided to prevent rupture of the pipe. The pipe shall be uniformly and continuously supported over its entire length on firm stable material. Blocking or mounding shall not be used to bring the pipe to final grade. The pipe shall not be dropped or dumped on the bedding or into the pipe trench. The ground surface near the pipe trench shall be free of loose rocks and stones greater than 1 inch in diameter.

Standard manufactured pieces shall be used for angles required to make direction changes. Directional pipe deflection shall be allowed in plastic pipe per the manufacture's allowable bend radius. Bell and spigot pipe should be laid with the bell pointed upstream. The pipe ends and couplings shall be free of foreign material when assembled.

**Thrust Blocks and Anchors** – When specified, concrete thrust blocks and anchors shall be installed as shown on the drawings or as staked in the field.

The concrete for the thrust blocks and anchors shall conform to the requirements of *General Specification 313B – Formed Concrete Waste Transfer Structure*.

The thrust block cavity shall be hand dug into undisturbed soil or previously placed compacted backfill. The cavity shall be formed with soil or wood to hold the freshly placed concrete without displacement until an initial set has occurred.

When excavation beyond the designated trench widths and depths as shown on the drawings occurs at locations where installation of concrete thrust blocks is required, provision for alternative thrust block shall be made. The concrete thrust block shall have a thickness of one pipe diameter and a contact face area that shall be formed against the pipe as shown on the drawings. Backfill shall be placed on all sides of the thrust block and to the sides of the excavation. It shall be compacted as specified for initial backfill.

**Pressure Testing** – Pipelines shall be pressure tested by one of the following method:

1. Before backfilling, the pipe shall be filled with water and tested at design working head or a minimum head of 10 feet, whichever is greater. All leaks shall be repaired and the test repeated before backfilling starts.
2. Pressure test at the working pressure for 2 hours. The allowable leakage shall not be greater than 1 gallon per diameter inch per mile. If leakage exceeds this rate, the defect must be repaired until retests show that the leakage is within the allowable limits, but all visible leaks must be repaired.

**Initial Pipe Trench Backfill** – Unless otherwise specified, initial backfill to 6 inches above the top of the conduit is required. Earth haunching and initial backfill material shall consist of soil material that is free of rocks, stones, or hard clods more than 1 inch in diameter. Coarse backfill material shall be the specified sand, gravel, crushed rock, or drainfill material.

Initial backfill shall be placed in two stages. In the first stage (haunching), backfill is placed to the pipe spring line (center of pipe). In the second stage, it is placed to 6 inches above the top of the pipe. The pipe shall be weighed down or anchored sufficiently to prevent its displacement from the bedding during placement of the backfill under the haunches.

The first stage material shall be worked carefully under the haunches of the pipe to provide continuous support throughout the entire pipe length. The haunching backfill material shall be placed in layers that have a maximum thickness of about 6 inches and are compacted as shown on the drawings. During compaction operations, care shall be taken to ensure that the tamping or vibratory equipment does not come in contact with the pipe and the pipe is not deformed or displaced.

When pressure testing is not specified, the pipe shall be covered with a minimum of 6 inches of backfill material as soon as possible following assembling of the pipe in the trench, but not later than within the same day that placement has occurred. When pressure testing is specified, sufficient backfill material shall be placed over the pipe to anchor the conduit against movement during pressure testing activities.

**Final Pipe Trench Backfill** – Final backfill shall consist of placing the remaining material required to complete the backfill from the top of the initial backfill to the ground surface, including mounding at the

top of the trench. Final backfill material within 2 feet of the top of the pipe shall be free of debris or rocks larger than 3 inches nominal diameter. Coarse backfill material shall be the specified sand, gravel, crushed rock, or drain fill shown on the drawings. Final backfill shall be placed in approximately uniform, compacted layers. Final backfill shall be placed in approximately uniform, compacted layers. Final backfill compaction and layer thickness requirements shall be as shown on the drawings.

Vehicles or construction equipment shall not be allowed to cross the pipe until the minimum earth cover and required density has been obtained.

#### **LANDSCAPING AND VEGETATION**

The area adjacent and in the immediate vicinity of the structure shall be shaped to blend with the natural surroundings and to complement the structure and work area around it. Shaping shall be in such a way as to drain or divert all overland and roof runoff safely from the structure and surrounding work area. All disturbed areas around the structure, including spoil areas, shall be vegetated and/or surfaced with gravel, chert, or some other acceptable covering as permitted by the NRCS approving authority. Spoil areas not used for farm traffic shall be vegetated.

Permanent vegetation will be established to the plant species and by methods prescribed by the approving official. All vegetating of disturbed areas will be done as critical area planting and shall include liming, fertilizing, seedbed preparation, seeding and mulching. Temporary vegetation may be used when conditions or seeding dates are not suitable for the establishment of permanent vegetation.