

INVITATION TO BID

HOPKINSVILLE SOLID WASTE AUTHORITY

Office of the Procurement Specialist
715 South Virginia Street
P. O. Box 707
Hopkinsville, Kentucky 42241-0707

**TITLE: BUIDLING FOR THE HOPKINSVILLE SOLID WASTE AUTHORITY LANDFILL
LEACHATE WWTP MODIFICATIONS PROJECT**

BID DOCUMENTS ENCLOSED

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**IMPORTANT: PLEASE ADVISE THE OFFICE OF THE PROCUREMENT SPECIALIST
IMMEDIATELY IN THE EVENT ANY OF THE ABOVE DOCUMENTS ARE NOT
ENCLOSED.**

INVITATION TO BID

HOPKINSVILLE SOLID WASTE AUTHORITY

Office of the Procurement Specialist
715 South Virginia Street
P.O. Box 707
Hopkinsville, KY 42241

Sealed bids addressed to the City Procurement Specialist for the construction of:

BUILDING FOR THE HOPKINSVILLE SOLID WASTE AUTHORITY LANDFILL LEACHATE WWTP MODIFICATIONS PROJECT, Hopkinsville, KY

Mandatory Pre-Bid meeting September 7, 2017 at the Hopkinsville Solid Waste Authority
(HSWA) Office located at 5665 Mt. Zoar-Latham Road, Hopkinsville, KY 42240 at 10:00 A.M.,
(CST)

Bids will be received at the above address to Hopkinsville Solid Waste Authority (HSWA), 5665 Mt. Zoar-Latham Road, Hopkinsville, Kentucky, **until 11:00 a.m., local time, on September 14, 2017**, at which time the bids will be opened and read aloud publicly in Conference Room, at the same address. The following pages contain the Invitation to Bid, General Conditions, Specifications and Detailed Specifications. The OWNER'S share will provide from current funds on hand/or from revenue bonds.

Hopkinsville Solid Waste Authority may consider informal any bid not prepared and submitted in accordance with the provisions of this advertisement and/or the Specification and may waive any informalities or reject any and all bids.

GENERAL CONDITIONS

1. **INSTRUCTIONS, SPECIFICATIONS AND FORMS:** Instructions, specifications and forms may be obtained in person or by mail from the Procurement Specialist, City of Hopkinsville, P.O. Box 707; 715 South Virginia Street, Hopkinsville, KY 42241. Telephone (270) 890-0230.

(a) All bids are to be submitted on an in accordance with the attached Bid Form. The form must be signed and dated in the appropriate space.

(b) Each bid must be submitted in a sealed envelope and clearly and prominently marked on the outside of the envelope with the following:

SEALED BID – HSWA BUIDLING FOR THE HOPKINSVILLE SOLID WASTE
AUTHORITY LANDFILL LEACHATE WWTP MODIFICATIONS PROJECT BID No.:
HSWA 18-11649-81-008

If forwarded by mail, the sealed envelope containing the proposal must be enclosed in another envelope marked SEALED BID – BUIDLING FOR THE HOPKINSVILLE SOLID WASTE AUTHORITY LANDFILL LEACHATE WWTP MODIFICATIONS PROJECT BID No.: HSWA 18-11649-81-008

(c) and mailed to Hopkinsville Solid Waste Authority (HSWA), 5665 Mt. Zoar-Latham Road, Hopkinsville, Kentucky, until 11:00 a.m., allowing sufficient time for such mailing to reach this address prior to the scheduled closing time for receipt of bids.

(d) Additional information or clarifications of any of the instructions or information contained herein may be obtained for the Office of the Procurement Specialist.

(e) Any bidder or bidders finding any discrepancy in or omission from the specification, in doubt as to their meaning, or believing that the specifications are discriminatory, shall notify the City Procurement Specialist in writing within five (5) days of the scheduled opening of the bids. Exceptions as taken in no way obligates HSWA to change the specifications, the City Procurement Specialist will notify all bidders in writing, of any interpretations made specifications or instructions.

(f) HSWA will assume no responsibility for oral instructions or suggestions. All official correspondence in regard to the specifications should be directed to and will be issued by the City Procurement Specialist.

(g) The successful bidder will be required to purchase a City of Hopkinsville vendor's license prior to the official award of the bid.

(h) Any bidder may withdraw his bid either in person or in writing at any time prior to the scheduled time for closing the receipt for bids. Withdrawals after the scheduled time for closing the receipt of bids will not be permitted.

2. AWARD OF CONTRACTS

- (a) All bids will be judged on the basis of best buy to HSWA and compliance with the General Conditions and conformance with the specifications. HSWA reserves the right to reject any and all bids.
- (b) Any other considerations or basis for judgment will be stated in the specifications
- (c) The HSWA General Manager reserves the right to award contracts or place orders to a single source or divide awards and orders or enact such combination as shall, in his judgment, be in the best interest of HSWA.

3. DELIVERY

- (a) All items connected with this construction shall be delivered F.O.B. destination and delivery costs and charges included in the bid.

4. COMPETITION

In order to assure fair competition and to permit determination of the best bid:

- (a) The name of any manufacturer, trade name, or manufacturer or vendor catalog number mentioned in the specifications or Bid Form is to designate a standard of quality and type and for no other reason.
- (b) Bids which show any omission, irregularity, alteration of forms, additions not called for, conditional or unconditional unresponsive bids, or bids obviously unbalanced may be rejected.
- (c) All bids must be accompanied by such descriptive literature and documents as may be called for by the specifications or Bid Form.
- (d) Specifications provided are based on HSWA needs and uses, estimated costs of operation and maintenance, and other significant and/or limiting factors to meet HSWA requirements and shall be consistent with HSWA policies. Minimum specifications and maximum specifications included, are not established arbitrarily to limit competition or to exclude otherwise competitive bidders.
- (e) The Detailed Specifications are used to designate a standard of quality and type and for no other reason.

5. DISPUTES

In cases of disputes, as to whether or not an item or service quoted or delivered meets specifications, the decision of the City Procurement Specialist, or authorized representative, shall be final and binding on all parties. The City Procurement Specialist may request written recommendation of the general manager of HSWA using the item.

6. EXCEPTIONS

The submission of a bid shall be considered an agreement to all the terms, conditions and specifications provided herein and in the various bid documents, unless specifically noted otherwise in the space provided on the Bid Form.

7. BID BINDING

Unless otherwise specified, all formal bids submitted shall be irrevocable for sixty (60) calendar days.

8. UNIT PRICING

Unless clearly shown on the Bid Form that it is the intent of the bidder that a reduced total price is being offered on the basis of receiving an award of all items covered by the total, any totals should be the actual sum of the extension of unit price(s), extended price(s), and/or total price(s), unit prices will govern and the bid will be recalculated accordingly.

9. DELIVERY TIME

The bidder is to indicate on the Bid Form the approximate completion time, weather permitting, from date of signing contract.

10. WARRANTY

The Design Build building furnished in accordance with these specifications, shall be guaranteed free from defect in workmanship and materials.

11. DETERMINATION OF AWARD

Price.....	50
Conformance with Minimum Specifications.....	45
Local Vendor.....	05

TOTAL 100

GENERAL SPECIFICATIONS

1. The work described herein shall consist of review of appendix A (attached) Landfill Leachate WWTP Modifications Project 11649-002. Plans for this project can be viewed onsite at HSWA, 5665 Mt. Zoar-Latham Road, Hopkinsville, KY Monday thru Friday between the hours of 7am until 3:30pm (CST) or Hopkinsville Municipal Center, 715 S. Virginia Street, Hopkinsville, KY, Monday thru Friday between the hours of 8:30am until 4pm (CST). Design build to be built with red iron steel, contain one ADA complaint restroom, office space, well insulated structure with HVAC system.
 - (a) Plans for Site and Building Construction submitted are the responsibility of the contractor.
 - (b) Building Permits, Site Review Fees are to be paid by the Contractor.
 - (c) Proof of Workers Compensation that meet the requirements of the state of Kentucky and proof of \$1,000,000.00 of General Liability Insurance are to be included in the Bid Packet.
 - (d) All materials furnished under this contract shall be of good quality and workmanship.
 - (e) The building specifications are to meet the 2005 Edition of the Kentucky Building Code and all Site and NFPA National Design Specification for Wood Construction (NDS) and comply with the appropriate NDS and Truss Plate Institute (TPI) standards. All wood members shall be treated lumber.
 - (f) Site work for building shall be done by owner.

2. DELIVERY AND ERECTION

The building and all related materials furnished by the successful bidder shall be delivered to and erected or assembled at the site specified and per the approved plans. The contractor shall be responsible for the safe unloading and storage of all materials.

3. TIMETABLE FOR WORK

The contract deadline for this project is eight (8) weeks at which time all work and documentation must be submitted to HSWA. Liquidated damages of \$500.00 per day if all work is not completed by this date.

4. EXCEPTIONS

Major exceptions to these specifications or failure to submit requested information may be considered cause for rejection of the bid.

DETAILED SPECIFICATIONS

The following are minimum specifications desired by HSWA.

BIDDER SPECIFICATIONS

Bidder is requested to indicate either by writing “Comply” or “Exception” whether his/her product meets the minimum specifications as listed on this opposite side. If “Exception” is written, please indicate in the space provided the deviation.

SUMMARY OF WORK, GUARANTEE AND CONTRACTOR EXPERIENCE

1. The contractor shall furnish all labor, material, equipment and supervision for completed construction of the Design Build for R/O. The contractor shall provide complete construction site drawings.
-

2. The contractor shall provide guarantee of one (1) year on the building and five (5) years on the roof. Roof guarantee shall include labor and materials.
-

3. The Contractor shall have a minimum experience of completing at least five (5) similar buildings. Contractor shall include name, address and telephone numbers of other owners of the same or similarly constructed building, supplied and constructed by his/her firm.
-

DESIGN AND MATERIAL REQUIREMENTS

1. Configuration
 - (a) The building and roof shall be designed to meet the 2006 Kentucky Building Code for ground snow load and wind load.
-

- (b) Owner shall select color of the metal.
-

ACKNOWLEDGEMENT OF RECEIPT OF BID PACKET

BUILDING FOR THE HOPKINSVILLE SOLID WASTE AUTHORITY LANDFILL LEACHATE
WWTP MODIFICATIONS PROJECT

BID NUMBER HSWA 18-11649-81-008

CITY PROCUREMENT SPECIALIST

HOPKINSVILLE, KENTUCKY

I HEREBY ACKNOWLEDGE RECEIPT OF THE BID PACKET FOR BUILDING FOR THE
HOPKINSVILLE SOLID WASTE AUTHORITY LANDFILL LEACHATE WWTP MODIFICATIONS
PROJECT. MY COMPANY INTENDS TO BID ON OR BEFORE 11:00 A.M., LOCAL TIME,
THURSDAY, SEPTEMBER 14, 2017 ON THE PROJECT AS SPECIFIED IN THE PACKET
RECEIVED.

COMPANY AUTHORIZED SIGNATURE

PRINT NAME

COMPANY NAME

DATE

BID FORM

Company Name _____

Authorized Representative _____

Address _____

Phone _____ Fax _____ Email _____

DESCRIPTION

BIDDER DESCRIPTION COST

Design Build R/O building	_____
Concrete	_____
HVAC	_____
Plumbing	_____
Electrical	_____

Total Cost _____

I, the undersigned do hereby certify that I am a duly authorized representative of _____ located at _____ and I have carefully examined the Instructions, Specifications and Bid Form and agree to all terms and conditions as set forth in them.

Signature _____ Title _____

Acknowledged before me this _____ day of _____, 2017

NOTARY PUBLIC

My Commission Expires: _____

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NEXT PAGE IS APPENDIX A ATTACHMENT**

SECTION 312316 - EXCAVATION

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Excavating for building foundations.
- B. Related Sections:
 - 1. Section 312323 - Fill.
 - 2. Section 331113 – Underground Plastic Piping And Valves.
- C. Related Drawings
 - 1. Structural Notes – Earthwork and Foundations
 - 2. Utility Plan – Utility Locations
 - 3. Utility Profiles – Elevations of Utility Lines
 - 4. Civil Notes And Details – Trenching Requirements

1.2 SUBMITTALS

- A. Section 013300 - Submittal Procedures: Requirements for submittals.
- B. Excavation Protection Plan: Describe sheeting, shoring, and bracing materials and installation required to protect excavations and adjacent structures and property; include structural calculations to support plan.

1.3 QUALITY ASSURANCE

- A. Perform Work in accordance with Kentucky Transportation Cabinet Standard Specifications for Road and Bridge Construction, Latest effective edition.
- B. Maintain one copy on site.

PART 2 - PRODUCTS

- 2.1 Not Used.

PART 3 - EXECUTION

3.1 PREPARATION

Hopkinsville Solid Waste Enterprise
Landfill Leachate WWTP Modifications Project
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- A. Call Local Utility Line Information service, Kentucky811, in conformance with applicable laws.
- B. Identify required lines, levels, contours, and datum.
- C. Protect utilities indicated to remain from damage.
- D. Protect bench marks, survey control points, and existing structures, from excavating equipment and vehicular traffic.

3.2 EXCAVATION

- A. Underpin adjacent structures which may be damaged by excavation work.
- B. Excavate to the required lines and grades to accommodate building foundations and slabs-on-grade.
- C. Compact disturbed load bearing soil in direct contact with foundations as noted on the Drawings.
- D. Slope banks with machine to angle of repose or less until shored.
- E. Do not interfere with 45 degree bearing splay of foundations.
- F. Grade top perimeter of excavation to prevent surface water from draining into excavation.
- G. Trim excavation. Remove loose matter.
- H. Remove lumped subsoil, boulders, and rock.
- I. Notify Owner of unexpected subsurface conditions.
- J. Correct areas over excavated with compacted coarse aggregate as directed.
- K. Remove excess and unsuitable material from site.
- L. Repair or replace items indicated to remain damaged by excavation.

3.3 FIELD QUALITY CONTROL

- A. Request visual inspection of bearing surfaces by inspection agency before installing subsequent work.

3.4 PROTECTION

- A. Prevent displacement or loose soil from falling into excavation; maintain soil stability.
- B. Protect bottom of excavations and soil adjacent to and beneath foundation from freezing.

- C. Protect structures, utilities and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earth operations.

END OF SECTION 312316

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SECTION 312323 - FILL

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Backfilling building perimeter to subgrade elevations.
2. Fill under slabs-on-grade.
3. Fill for over-excavation.

B. Related Sections:

1. Section 312316 - Excavation.

C. Related Drawings

1. Structural Notes – Earthwork and Foundations
2. Utility Plan – Utility Locations
3. Utility Profiles – Elevations of Utility Lines
4. Civil Notes And Details – Trenching Requirements

1.2 REFERENCES

A. ASTM International:

1. ASTM D698 - Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft³ (600 kN-m/m³).
2. ASTM D1556 - Standard Test Method for Density and Unit Weight of Soil in Place by the Sand-Cone Method.
3. ASTM D1557 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft³ (2,700 kN-m/m³).
4. ASTM D2167 - Standard Test Method for Density and Unit Weight of Soil in Place by the Rubber Balloon Method.
5. ASTM D2922 - Standard Test Method for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).
6. ASTM D3017 - Standard Test Method for Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth).

1.3 SUBMITTALS

A. Section 013300 - Submittal Procedures: Requirements for submittals.

B. Manufacturer's Certificate: Certify Aggregate Materials meet or exceed specified requirements.

1.4 QUALITY ASSURANCE

- A. Perform Work in accordance with Kentucky Transportation Cabinet (KYTC) Standard Specifications for Road and Bridge Construction, Latest effective edition.
- B. Maintain one copy on site.

PART 2 - PRODUCTS

2.1 FILL MATERIALS

- A. General Aggregate: KYTC Dense Graded Aggregate

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify foundations, piping, insulation, damp proofing, and waterproofing installation has been inspected.
- B. Verify structural ability of unsupported walls to support loads imposed by fill.

3.2 PREPARATION

- A. Compact subgrade to density requirements for subsequent backfill materials.
- B. Cut out soft areas of subgrade not capable of compaction in place. Backfill with Dense Graded Aggregate fill and compact to density equal to or greater than requirements for subsequent fill material.

3.3 BACKFILLING

- A. Backfill areas to contours and elevations with unfrozen materials.
- B. Systematically backfill to allow maximum time for natural settlement. Do not backfill over porous, wet, frozen or spongy subgrade surfaces.
- C. Place fill material in continuous layers and compact as indicated on the Drawings.
- D. Place material in continuous layers as indicated on the Drawings.
- E. Employ placement method that does not disturb or damage other work.
- F. Maintain optimum moisture content of backfill materials to attain required compaction density.

- G. Backfill simultaneously on each side of unsupported foundation walls.
- H. Slope grade away from building minimum 2 percent slope for minimum distance of 10 ft unless noted otherwise.
- I. Make gradual grade changes. Blend slope into level areas.
- J. Remove surplus backfill materials from site.

3.4 TOLERANCES

- A. Top Surface of Backfilling within Building Areas and slabs on grade: Plus or minus 1/2 inch from required elevations.
- B. Top Surface of General Backfilling: Plus or minus 1 inch from required elevations.

3.5 FIELD QUALITY CONTROL

- A. Perform laboratory material tests in accordance with ASTM D1557.
- B. Perform in place compaction tests in accordance with the following:
 - 1. Density Tests: ASTM D1556, ASTM D2167, or ASTM D2922.
 - 2. Moisture Tests: ASTM D3017.
- C. When tests indicate Work does not meet specified requirements, remove Work, replace and retest.
- D. Frequency of Tests: 1 test per layer per 400 square feet.

3.6 PROTECTION OF FINISHED WORK

- A. Reshape and re-compact fills subjected to vehicular traffic.

3.7 SCHEDULE

- A. Interior and exterior Slab-On-Grade:
 - 1. Fill Type: Dense Graded Aggregate compacted to 95 percent.
- B. Exterior Side of Foundation Walls :
 - 1. Fill Type: Dense Graded Aggregate compacted to 90 percent.
- C. Fill to Correct Over-excavation:
 - 1. Fill Type: Dense Graded Aggregate compacted to 95 percent.

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END OF SECTION 312323

SECTION 331113 – UNDERGROUND PLASTIC PIPING AND VALVES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Pipe, fittings, and valves for underground piping.
2. Underground pipe markers.
3. Bedding and cover materials.

B. Related Requirements:

1. Trenching and backfill: As detailed on the Drawings.

1.2 REFERENCE STANDARDS

A. American Association of State Highway and Transportation Officials:

1. AASHTO T 180 - Standard Method of Test for Moisture-Density Relations of Soils Using a 4.54-kg (10-lb) Rammer and a 457-mm (18-in.) Drop.

B. ASTM International:

1. ASTM D698 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12 400 ft-lbf/ft³ (600 kN-m/m³).
2. ASTM D1557 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft³ (2,700 kN-m/m³).
3. ASTM D1785 - Standard Specification for Poly(Vinyl Chloride) (PVC) Plastic Pipe, Schedules 40, 80, and 120.
4. ASTM D6938 - Standard Test Method for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth).
5. ASTM F477 - Standard Specification for Elastomeric Seals (Gaskets) for Joining Plastic Pipe.
6. ASTM D2855 – Practice for Making Solvent-Cemented Joints with Poly(Vinyl Chloride) (PVC) Pipe and Fittings.

1.3 SUBMITTALS

A. Product Data: Submit data on pipe materials, solvent cement, pipe fittings, valves, and accessories.

B. Manufacturer's Installation Instructions: Submit instructions for preparation of joining surfaces, use of solvent cement, recommended temperature range, and recommended curing time.

- C. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.
- D. Field Quality-Control Submittals: Indicate results of Contractor-furnished tests and inspections.

1.4 CLOSEOUT SUBMITTALS

- A. Project Record Documents: Record actual locations of piping mains, valves, connections, thrust restraints, and invert elevations.
- B. Identify and describe unexpected variations to subsoil conditions or discovery of uncharted utilities.

1.5 QUALITY ASSURANCE

- A. Valves: Mark valve body with manufacturer's name and pressure rating.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Deliver and store valves in shipping containers with manufacturer's labeling in place and inspect for damage.
- B. Block individual and stockpiled pipe lengths to prevent moving.
- C. Store PVC materials out of sunlight.

1.7 EXISTING CONDITIONS

- A. Field Measurements:
 - 1. Verify locations and depth of existing underground lines that may interfere with piping.

PART 2 - PRODUCTS

2.1 PIPING

- A. PVC Pipe and Fittings :
 - 1. Schedule 80, conforming to the referenced standards

2.2 UNDERGROUND PIPE MARKERS

- A. Plastic Ribbon Tape:
 - 1. Brightly colored, continuously printed.

2. Minimum 6 inches wide by 4 mil thick.
3. Manufactured for direct burial service.

2.3 VALVES

- A. Manufacturers: Spears Series 200 or Equal
- B. Description: PVC construction, True Union type, with socket ends.
- C. Operator: Provide buried valves with 2" operator nuts instead of standard T-Handle
- D. Accessories: Provide two steel T-Wrenches, 6' length, compatible with valve operators.

2.4 VALVE BOXES

- A. Manufacturers:
 1. Bingham & Taylor or equal
- B. Description: 4" diameter A.B.S. plastic, screw adjustment, cast iron rim, cast iron lid, bell bottom to fit over valves.
- C. Extension Range: 26"-34"
- D. Cover: Marked "Water"

2.5 MATERIALS

- A. Bedding and Backfill:
 1. Bedding: As Detailed on the Drawings.
 2. Backfill: As Detailed on the Drawings.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify that existing underground lines are as indicated on Drawings.

3.2 PREPARATION

A. Preconstruction Site Photos:

1. Take photographs of other underground lines that are exposed during trenching.

B. Pipe Cutting:

1. Cut pipe ends square and prepare ends as required by the referenced standards or as recommend by the pipe manufacturer.

3.3 INSTALLATION

A. Bedding:

1. Excavation:

- a. Excavate pipe trench as detailed on the Drawings.
 - b. Hand trim excavation for accurate placement of pipe to elevations as indicated on Drawings.
2. Dewater excavations to maintain dry conditions and to preserve final grades at bottom of excavation.
 3. Provide sheeting and shoring as required by applicable regulations.
 4. Place bedding material at trench bottom, level fill materials in one continuous layer as detailed on the Drawings.
 5. Prepare bedding to provide continuous support for the pipe.
 6. Hand excavate recesses to allow joint assembly without contamination of joints.

B. Piping:

1. Install pipe according to referenced standards and the manufacturer's instructions.
2. Install pipe in conformance to the profiles shown on the drawings unless conflicts with other lines are encountered.
3. Keep pipe and fittings clean and dry to avoid contamination of joint surfaces.
4. Do not assemble piping during precipitation.
5. Do not assemble pipe when ambient temperature is outside of the manufacturer's recommended temperature range, to avoid excessive expansion or contraction after trench is closed.
6. After joining pipe, allow piping to remain undisturbed during the required curing time. Do not backfill or test piping until the curing time has been reached. Curing time will depend on pipe size, ambient temperature, and humidity.
7. Close pipe openings with watertight plugs during Work stoppages.

C. Valves:

1. Install valves upright with full support below and around.

D. Pipe Markers:

- a. Install plastic ribbon tape continuous over top of pipe buried 6 inches below finish grade.
- E. Backfilling:
1. Backfill around sides and to top of pipe with cover fill uniformly around pipe in minimum lifts of 3 inches, and tamp in place.
 2. Maintain optimum moisture content of bedding material to attain required compaction density.
- F. Backfilling: Backfill the remaining trench as detailed on the Drawings.

3.4 FIELD QUALITY CONTROL

- A. Pressure test system according to AWWA C600 and following:
1. Test piping after bedding is built up to 1 foot over pipe, before trenches are backfilled to the surface, and before concrete slabs are placed.
 2. Pressure: Not less than 50 psig.
 3. Conduct hydrostatic test for at least two hours.
 4. Slowly fill section to be tested with water; expel air from piping at high points. Install corporation cocks at high points. Close air vents and corporation cocks after air is expelled. Raise pressure to specified test pressure.
 5. Observe joints, fittings, and valves under test. Remove and renew cracked pipes, joints, fittings, and valves showing visible leakage. Retest.
 6. Correct visible deficiencies and continue testing at same test pressure for additional two hours to determine leakage rate. Maintain pressure within plus or minus 5 psi of test pressure. Leakage is defined as quantity of water supplied to piping necessary to maintain test pressure during period of test.
 7. Compute maximum allowable leakage using following formula:
 - a. $L = SD \times \sqrt{P}/C$.
 - 1) L = testing allowance, gph.
 - 2) S = length of pipe tested, feet.
 - 3) D = nominal diameter of pipe, inches.
 - 4) P = average test pressure during hydrostatic test, psig.
 - 5) C = 148,000.
 - b. If pipe under test contains sections of various diameters, calculate allowable leakage from sum of computed leakage for each size.
 8. Leakage:
 - a. If test of pipe indicates leakage greater than allowed, locate source of leakage, make corrections, and retest until leakage is within allowable limits.
 - b. Correct visible leaks regardless of quantity of leakage.
- B. Compaction Testing for Bedding: Comply with ASTM D6938.

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Landfill Leachate WWTP Modifications Project
11649-002

- C. If tests indicate Work does not meet specified requirements, remove Work, replace, and retest.
- D. Frequency of Compaction Tests:
 - 1. Tests at 50 foot intervals in bedding before placing pipe.
 - 2. Tests at 50 foot intervals in bedding after bedding is 1 foot over pipe
 - 3. Tests at 50 foot intervals along completed trenches

END OF SECTION 31113