EAST LARIMER COUNTY WATER DISTRICT

GENERAL NOTES FOR CONSTRUCTION

Version: 11/22/2019

The following information is condensed from the current "Standard Construction Specifications for Water Mains" (Specification) as adopted by the East Larimer County Water District ('ELCO' or 'District') and is to be considered as such. In the event of any conflict the full District Specification document shall take precedence over these general notes.

1. Standards and Specifications: Construction shall be per the District Specifications in effect at the start of construction. Material or equipment shall be manufactured per the most recent version of applicable industry standards.
2. Locates: Contractor shall coordinate field locates of all existing utilities prior to commencement of any construction and as required notify all affected utility companies prior to commencing construction. Cost of repairs to any utility damaged during District waterline installation shall be the responsibility of the Contractor.
3. Damage to Property: Contractor shall continuously maintain adequate protection from damage of all public and private property through which the work is done and shall be fully responsible for all costs associated with damage to any and all public and private property.
4. Safety: Contractor shall comply with any and all requirements and regulations as set forth by any local, City, County, State or Federal agency having applicable authority.
5. Landscaping Adjacent to District Waterlines: No landscaping (bushes, shrubs, trees or other plantings) that has a mature height of over 3 feet (3-ft) shall be placed within ten feet (10-ft) of any District waterline or appurtenance (distribution main, service line, fire hydrant, meter, etc.). Bushes or shrubs with a mature height of less than 3-ft shall be placed a minimum 4-ft from any District waterline or appurtenance. The District shall have the right to remove any landscaping that violates this standard, at any time such landscaping is discovered, and shall not be required to replace the removed landscaping.
6. Design Approval and Construction Start: No construction shall begin without prior design acceptance from ELCO. District shall be notified 48 hours in advance of starting construction or testing to allow for scheduling.

7. Permits: Contractor is responsible for obtaining all permits which may be required. For any permitting where the District must apply for a permit the Contractor shall coordinate, cover the cost and schedule the permit acquisition with the District.

8. Changes During Construction: No verbal authorization for field revision shall be given. All requests for such field revision shall be made in writing with the proposed change indicated on a copy of the signed design drawings. Any field revision approved and installed shall also be accurately documented on the As-Built Drawings.

9. Materials of Construction:

   a. Pipe: All water piping shall be Polyvinyl Chloride (PVC). All PVC piping 6-inch through 12-inch shall be DR 18 (pressure class 235 psi) and manufactured in accordance with AWWA Standard C900, "Polyvinyl Chloride (PVC) Pressure Pipe, 4-inch through 12-inch, For Water Distribution". All PVC piping 14-inch through 24-inch shall be DR 18 (pressure class 235 psi) and manufactured in accordance with AWWA Standard C905, "Polyvinyl Chloride (PVC) Water Transmission Pipe, Nominal Diameters 14-inch through 36". Pipe with a diameter greater than 24 inches shall be specified based on engineered design.

   b. Tracer Wire: All water piping shall be installed with a twelve (12) gauge solid copper wire, plastic coated, six hundred (600) volt taped to top of pipe and surfaced at each hydrant into a tracer wire box.

   c. Pipe Joints: Pipe joints shall be made using an integral bell with an elastomeric gasket push-on type joint or using machined couplings of a sleeve type with rubber ring gaskets and machined pipe ends to form a push-on type joint.

   d. Materials and Installation: All materials installed shall be new and free of manufacturer defects. Any defective or damaged materials noted on the construction site shall be so marked and removed from the site. Under no circumstances shall any PVC piping be installed utilizing mechanical equipment to seat the joints.

   e. Pipe Fittings: All fittings shall be mechanical joint, ductile iron, manufactured in accordance with AWWA Standard C153. Fittings shall be furnished with a cement-mortar lining of standard thickness class with a 250 psi pressure rating.

   f. Gate Valves: Gate valves shall conform to AWWA Standard C509 with mechanical joint, 2" open left operating nut and resilient seat.

g. Butterfly Valves: Butterfly valves shall be used for all valves 12-inches and larger and conform to AWWA Standard C504 with mechanical joint, 2" open left operating nut, resilient seat and shall be equipped with sand bonnet.

h. Fire Hydrants: Hydrants shall conform to AWWA Standard C502, 1" square open-right operating nut. Allowable manufacturers and models are Mueller Super Centurion with epoxy coated shoe or American Flo Control Waterous Pacer WB-67-250X with epoxy coated shoe. All fittings shall be swing assemblies with anchor couplings.

i. Pipe, Valve and Fitting Wrap: All fittings, valves, fire hydrant shoes and plugs shall be poly-wrapped with 8-mil thick polyethylene plastic wrap, double layered, and ends securely taped prior to backfill. All fitting bolts shall have zinc caps installed.

10. Bedding: All pipe shall be bedded in 3/4" washed rock uniformly graded and compacted. Trench shall be excavated to a depth below established grade equal to 1/4 of pipe diameter (min. 4"). Bell depressions shall be provided for all joints. In event that unstable trench conditions are encountered at pipeline grade 1-1/2" uniformly graded washed rock shall be used for stabilization. Bedding material shall be placed and compacted under and around sides of the pipe per the pipe manufacturer's installation recommendations. Note maximum trench width detail.

11. Backfill: Backfill of acceptable material shall be placed in 'lifts' of uniform horizontal layers not to exceed 6-inches of compacted depth per lift. Minimum 18" of compacted backfill above pipe must be in place before rolling mechanical equipment type compaction is to be used. Backfill shall be compacted to 95% of optimum density in roadway areas or per road authority's requirements, and 90% in fields or non-road locations. Backfill compaction testing frequency shall be at least one test per 100-lineal feet of pipeline length and at varying depths and locations in accordance with the requirements of the applicable road authority or beginning 1.5-feet above top of pipe and at 1-foot increments to grade.

12. Joint Restraint: All fittings, tees, plugs and fire hydrants shall be provided with anchor couplings and/or joint restraint in accordance with District Specifications or as required per engineer's design. Thrust blocks shall be used only as required per field conditions and as approved or directed by the District field inspector.

13. Concrete: All concrete construction, including thrust blocks, shall be completed utilizing Type 5 or equal cement only.

14. Asphalt Replacement: For asphalt pavement that is cut and has been in place less than two years (according to City or County Engineer's record), the cut shall be a minimum of 20 feet in width and will be replaced to the specified depth by a paving machine.

15. Pipe Cover: A minimum cover of 4-1/2 feet of cover over top of pipe shall be maintained throughout the waterline and service line installation, particularly in areas of new grading and drainage swales. Extra bury depth may be required to maintain minimum cover at drainage culvert crossings and/or fire hydrant runs. Maximum allowable cover shall be 6 feet, unless specifically approved by the District.

16. Connection to Existing System: All connections to existing waterlines shall be completed at developer's expense by District personnel or the District's authorized contractor with no exception.

17. Inspection: The District shall have the authority to assign an inspector who shall inspect, check and verify that any and all work, including all materials to be incorporated in the work, excavation, bedding, backfill, testing and all construction methods and practices of the installed facilities is equal to or better than minimum construction requirements as set forth in the District’s Specifications. .

18. Testing: All lines shall be pressure tested, chlorinated and flushed by the Contractor in accordance with District Specifications and under the District's supervision. Upon passing chlorination testing, bacteriological testing will be completed by a State certified water quality control laboratory. Copies of all passing test results, including soils compaction in the area of water main construction, shall be provided to the District.

19. Preliminary Acceptance: Preliminary Acceptance shall be issued to the Owner when all project work is complete, tested and operational such that the infrastructure is ready to be accepted by the District. Documentation required prior to issuance of Preliminary Acceptance includes but is not limited to chlorination test report, bacteriological test report, hydrotest report, compaction testing report, verification of project costs, As-built drawings and Record Drawings. Following receipt, review and acceptance by the District of these and other documents as may be required per project specifics, the District will issue Preliminary Acceptance.

20. Project As-Built and Record Drawing Requirements:

a. As-Built Drawings are compiled and maintained during construction by the Contractor and identify, in red ink, on-site changes to the original design. As-Built Drawings shall be delivered to the District (electronically in PDF format or

otherwise as requested by the District) for acceptance and to the project's design engineer for creation of Record Drawings.

21. Record Drawings are prepared by the project's design engineer and shall accurately reflect any change made in the field which varies from the accepted construction plans, as noted in the As-Built Drawings, including at a minimum, field dimensions and elevations, horizontal and vertical locations of underground utilities and appurtenances. The Record Drawings shall be reviewed and accepted by the District prior to Preliminary Acceptance of the project. Record Drawings are to be delivered to the District in electronic format as Adobe (PDF), AutoCAD and ArcView shape files (release version to be confirmed with District at time of submittal).

22. Warranty: The Owner shall warrant all work associated with the waterline installation including, but not limited to the materials, installation workmanship and surface restoration for a period of two years from date of Preliminary Acceptance. During this warranty period the Owner shall repair any defects in the work and maintain the work area. At the close of the two-year warranty period and upon satisfactory correction of any deficiencies noted, the District shall accept the constructed lines and appurtenances as the sole property and responsibility of the District.

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