

TO

Name: Plan Holders

PROJECT

Name: Water Treatment Plant
Equipment Upgrades
A2H #: 22209.02

DETAILS

Addendum #: 1
Date of Issuance: 7/25/24
Sent Via: Email
Total Pages: 27

This addendum modifies the original drawings/specifications and shall be included as part of the contract documents. Items in this addendum apply to all drawings and specification sections whether referenced or not involving the portion of the work added, deleted, modified, or otherwise addressed in the addendum.

The bidder shall acknowledge receipt of this addendum by placing the addenda dates and addenda numbers on the outside of their proposal envelope and in the place provided on the bid form. In addition, the bidder shall confirm receipt of this addendum by returning the signature page with appropriate initial where indicated via email (Bidding@a2h.com) or fax (901) 373-4002. Failure to do so may subject the bidder to disqualification.

ACKNOWLEDGEMENT OF RECEIPT

Name: _____

Company: _____

Signature: _____

Date: _____

GENERAL

1. A Pre-Bid Meeting was held on July 2, 2024. The attendance record of that meeting has been attached.
2. **Revised Bid Opening date: July 17, 2024 at 2:00 p.m. at Stanton Municipal Building, 8 Main Street, Stanton, TN 38069.**

CLARIFICATIONS

1. I was able to locate the mechanical and chemical treatment scope of work on C2.1 of the plans. However, I do not see any well information for Well 1. Could you please provide the log for Well #1 (including size and length of well casing, size and length of lap pipe, size and length of well screen, and total depth of well).
 - *We do not have an installation report of Well #1. However, the two wells are identical and we have included the installation report for Well #2 for reference.*
2. Is the pumping equipment still installed in Well #1? If so, will you provide a Pump Installation Report showing the following:
 - Pump column assembly size and setting depth.
 - Pump bowl size.
 - Suction Pipe size and setting depth.
 - Is this pump oil lube or water lube?
 - *See Item #1*

3. If the pumping equipment is still installed, once the pumping assembly is removed from Well #1, is the contractor to disassemble and provide an assessment report for any needed repairs, or will the pumping unit be installed right back after the well rehabilitation?
 - *Yes, prior to reinstalling the pumping assembly, the contractor should provide the Engineer with an assessment report for consideration. If any additional repairs are deemed necessary by the Engineer & Owner, the additional cost will be added by change order.*
4. Is there going to be a pre and post rehabilitation, High Resolution Television Survey conducted on Well #1?
 - *No.*
5. While we have the tooling and equipment necessary to complete the mechanical and chemical work scope detailed on C2.1 of the plans, would A2H consider utilizing our Patented High Velocity Injection Revitalization method for the chemical portion of the rehabilitation of Well #1?
 - *No, the work should be bid as described.*
6. Does the water plant property line extend further than the existing fencing?
 - *The fence line represents the property line on the west and north sides of the existing plant. The property extends to Hillcrest Street to the east. That area may be used for material storage during construction at the contractor's discretion.*
7. If fencing is removed, will temporary safety fencing be required during construction?
 - *Yes. Access to the existing plant should be secured during construction.*
8. Is there a Geotech report?
 - *No.*
9. Is there any painting required on the project? If so, are there any specifications and finish schedule that could be shared?
 - *Pumps, piping, and exposed steel framework shall be cleaned prior to coating using an approved solvent wipe or phosphatizing cleaner. The part must thoroughly dry before paint application. Open joints shall be caulked with an approved polyurethane sealant. Exposed surfaces shall be applied with one coat of Tnemec Series 69 Polyimide Epoxy Primer and one finish coat of Series 73 Aliphatic Acrylic Polyurethane for a total dry film thickness of 4-6 mils. Finish coat shall be semi-gloss white for optimum illumination and enhancement. The coating shall be corrosion, moisture, oil, and solvent resistant when completely dry. The factory finish shall allow for over-coating and touch-up for 6 months after coating. Thereafter, it will generally require sanding to accept a topcoat or touch-up coating.*
10. Is there a vendor that has helped with the planning of the hardware portion of the controls and instrumentation work? Gaines Williams plans to bid the integration, but not the hardware (control panel, etc.).
 - *The electrical contractor in this project shall be responsible for installing all equipment designed as part of this project, including controls. The integration shall be done by Gaines Williams & Associates to ensure consistency across several projects. The cost of integration shall be included in the contractor's bid.*

11. Is a job office required for the project... and if so, are there any specific requirements?
 - *A job office is not required.*
12. Is it correct that there is no epoxy coated or galvanized reinforcing steel on the project?
 - *Correct, refer to revised S0.1 for reinforcing clear cover requirements.*
13. The specifications imply that the fabrication shop that builds the aerator support must have certain certifications... but we are having trouble finding a "certified" shop that will bid the project (given size and schedule). Would it be a consideration to have this requirement waived for this project as long as the shop drawings and design meet what is shown on the project drawings?
 - *Refer to revised 05 1200 Structural Steel Framing specifications; fabricators not accredited by IAS in accordance with IAS AC172 shall, prior to fabrication, submit a Quality Assurance/Quality Control plan to the structural engineer of record demonstrating compliance with the requirements of IAS AC172 and Chapter 17 of the International Building Code edition specified on S0.1.*
14. Is it correct that the American Iron and Steel Act does not apply to this project?
 - *Correct*
15. Is it correct that there are no wage rate reporting/requirements for this project? There is a section under "Suggested Language Item b. that states "Contractors are required to pay wages to laborers and mechanics at a rate not less than the prevailing wages specified in a wage determination made by the Secretary of labor".
 - *Correct*

CHANGES TO SPECIFICATIONS

1. Section 05 1200 – Structural Steel Framing, revised.
2. Section 33 1416 – Site Water Utility Distribution Piping, added.

CHANGES TO DRAWINGS

1. Sheet S0.1 – General Notes, revised.

ATTACHMENTS

1. Pre-Bid Meeting Attendance Record.
2. Section 05 1200 – Structural Steel Framing
3. Section 33 1416 – Site Water Utility Distribution Piping
4. Well 2 Installation Report
5. Sheet S0.1 – General Notes.

Sincerely,
A2H, Inc.



Travis Martin, PE
Senior Associate Principal

PROJECT

Name: Town of Stanton – Water Plant
Renovation
A2H #: 22209.02

DETAILS

Meeting Purpose: Pre-Bid
Date: 7/2/2024
Time: 10:00 a.m.

SIGN IN

Name:	<u>Travis Martin</u>	Phone #:	<u>731-694-5039</u>
Company:	<u>A2H, Inc.</u>	Email:	<u>travism@a2h.com</u>
Name:	<u>Tareeq Chy</u>	Phone #:	<u>901-607-8380</u>
Company:	<u>A2H, Inc.</u>	Email:	<u>tareeq@a2h.com</u>
Name:	<u>Ethan Clark</u>	Phone #:	<u>731-377-5402</u>
Company:	<u>TyBe Company, LLC</u>	Email:	<u>eclark@tybeco.us</u>
Name:	<u>Andy LeJeune</u>	Phone #:	<u>901-568-4208</u>
Company:	<u>BAR Environmental</u>	Email:	<u>andy@bar-enviro.com</u>
Name:	<u>DANNY R. STOPPENHAGEN</u>	Phone #:	<u>(901) 767-6312</u>
Company:	<u>CHRIS-HILL CONST. CO. LLC</u>	Email:	<u>danny@chrishillconstruction.com</u>
Name:	<u>Frank Palma</u>	Phone #:	<u>731-733-3132</u>
Company:	<u>Quinn Construction Corp</u>	Email:	<u>frankpalma@gmail.com</u>
Name:	<u>Dylan Whitmore</u>	Phone #:	<u>901-691-4768</u>
Company:	<u>LANDMARK CONSTRUCTION</u>	Email:	<u>DYLAN@LANDMARK.CO.ORG</u>

**SECTION 05 1200
STRUCTURAL STEEL FRAMING**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Structural steel framing members.
- B. Work shall include but not be limited to:
 - 1. Beams
 - 2. Cap plates
 - 3. Connections, field and shop welded and bolted
 - 4. Bracing
 - 5. Shop drawings
 - 6. Shop prime coat and field touch-up
- C. Work not included but specified elsewhere:
 - 1. Steel roof and floor deck
 - 2. Field painting (except for touch-up)
 - 3. Ladders (steel)

1.02 REFERENCE STANDARDS

- A. 29 CFR 1926 - U.S. Occupational Safety and Health Standards; current edition.
- B. AISC (MAN) - Steel Construction Manual; 2011.
- C. AISC 360 - Specification for Structural Steel Buildings; 2010.
- D. ASTM A36/A36M - Standard Specification for Carbon Structural Steel; 2014.
- E. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products; 2015.
- F. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2009.
- G. ASTM A307 - Standard Specification for Carbon Steel Bolts, Studs, and Threaded Rod 60 000 PSI Tensile Strength; 2014.
- H. ASTM A449 - Standard Specification for Hex Cap Screws, Bolts and Studs, Steel, Heat Treated, 120/105/90 ksi Minimum Tensile Strength, General Use; 2010.
- I. ASTM A500/A500M - Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes; 2013.
- J. ASTM A563 - Standard Specification for Carbon and Alloy Steel Nuts; 2007a (Reapproved 2014).
- K. ASTM A992/A992M - Standard Specification for Structural Steel Shapes; 2011 (Reapproved 2015).
- L. ASTM A1011/A1011M - Standard Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, and Ultra-High Strength; 2014.
- M. ASTM E94 - Standard Guide for Radiographic Examination; 2004 (Reapproved 2010).
- N. ASTM E164 - Standard Practice for Contact Ultrasonic Testing of Weldments; 2013.
- O. ASTM E165/E165M - Standard Test Method for Liquid Penetrant Examination for General Industry; 2012.
- P. ASTM E709 - Standard Guide for Magnetic Particle Testing; 2014.

- Q. ASTM F959 - Standard Specification for Compressible-Washer-Type Direct Tension Indicators for Use with Structural Fasteners; 2013.
- R. AWS A2.4 - Standard Symbols for Welding, Brazing, and Nondestructive Examination; 2012.
AH. AWS D1.1/D1.1M - Structural Welding Code - Steel; 2015.
- S. IAS AC172 - Accreditation Criteria for Fabricator Inspection Programs for Structural Steel; International Accreditation Service, Inc; 2011.
- T. ITS (DIR) - Directory of Listed Products; current edition.
- U. AL. SSPC-SP 3 - Power Tool Cleaning; 1982 (Ed. 2004).
- V. American Institute of Steel Construction (AISC) "Specification for Structural Steel Buildings, AISC 360-10.
- W. AISC "2004 RCSC Specification for Structural Joints Using ASTM A325 or A490 Bolts"
- X. AISC "Code of Standard Practice for Steel Buildings and Bridges," March 18, 2005, with the following exclusions: Section 1.5.1, Section 4.4 - second sentence, Section 7.5.4.
- Y. American National Standards Institute (ANSI).
- Z. American Iron and Steel Institute (AISI).
- AA. Steel Structure Painting Council (SSPC).
- BB. Occupational Safety and Health Act (OSHA).

1.03 SUBMITTALS

- A. Submit erection drawings, detailed shop drawings and schedules, properly checked and coordinated with other parts of the construction. No reproduction of Contract Drawings for use as shop drawings will be permitted.
 - 1. Indicate profiles, sizes, spacing, locations of structural members, openings, attachments, and fasteners.
 - 2. Connections not detailed.
 - 3. Indicate cambers and loads.
 - 4. Indicate welded connections with AWS A2.4 welding symbols. Indicate net weld lengths.
 - 5. These drawings shall show: type of steel for each member, location and identification mark of each member; dimensions; size and weight of members; location of shop and field connections; weld details; welded sequence; and painting requirements. (The Welding symbols used shall be as adopted by the American Welding Society.)
 - 6. No splices in members will be permitted except where fully detailed on the shop drawings, approved by the Architect/Engineer.
 - 7. These drawings shall show all requirements such as (1) temporary members required for erection, including connections; and (2) all openings referred to under "fabrication" in this section.
 - 8. Except as otherwise noted, the approval of shop drawings will be for size and arrangement of principal and auxiliary components and strength of connections. Any error in dimensions shown on the shop drawings shall be the responsibility of the Contractor.
- B. Manufacturer's Mill Certificate: Certify that products meet or exceed specified requirements.
- C. Mill Test Reports: Indicate structural strength, destructive test analysis and non-destructive test analysis.
- D. Fabricator Test Reports: Comply with ASTM A1011/A1011M.
- E. Welders Certificates: Certify welders employed on the Work, verifying AWS qualification within the previous 12 months.
 - 1. Fabricator's Qualification Statement: Provide documentation showing steel fabricator is accredited under IAS AC172.

- F. Submit a description of the methods, sequence of erection, and type of equipment proposed for erecting the structural steel work.
- G. Fabrication of any material, cutting of any holes, or performance of any work shall not proceed until shop drawings have been approved by the Architect/Engineer.
- H. Certified copies, in triplicate, of mill test reports, including names and locations of mills and shops and analysis of chemical and physical properties of steel to be used on this project, shall be submitted to the Architect/Engineer before delivery to the job site.
- I. Manufacturer's certification, in triplicate, of bolt washers, nuts, and filler metal for welding shall be submitted to the Architect/Engineer.
- J. Furnish an affidavit certifying that throughout fabrication the identification of steel having a specified minimum yield point exceeding 36,000 psi has been maintained in accordance with ASTM A6/A6M and AISC recommended practice for identification of high strength steel during fabrication.
- K. Unless otherwise agreed upon by the Architect/Engineer in writing, the Architect/Engineer shall have sixteen (16) working days, from the day the shop drawings are received, in which to review structural steel shop drawings.

1.04 QUALITY ASSURANCE

- A. Fabricate structural steel members in accordance with AISC (MAN) "Steel Construction Manual."
- B. Comply with Section 10 of AISC 303 for architecturally exposed structural steel.
- C. Maintain one copy of each document on site.
- D. Fabricator: Company specializing in performing the work of this section with minimum 10 years of documented experience.
- E. Fabricator Qualifications: A qualified steel fabricator that is accredited by the International Accreditation Service (IAS) Fabricator Inspection Program for Structural Steel in accordance with IAS AC172. Fabricators not accredited by IAS in accordance with IAS AC172 shall, prior to fabrication, submit a Quality Assurance/Quality Control plan to the structural engineer of record demonstrating compliance with the requirements of IAS AC172 and Chapter 17 of the International Building Code edition specified on S0.1.
 - 1. The contractor shall have completed project of similar scope and have adequate facilities to meet production requirements and have satisfactory capabilities to maintain proper job progress. It is imperative that steel is delivered to the site on schedule and in the sequence required for efficient erection on schedule.
 - 2. The Fabricator and Erector shall have in place and maintain a quality assurance program, meeting the approval of the Architect/Engineer, to ensure that the work is performed in accordance with the requirements referenced in the AISC Code of Standard Practice, the AISC Specification for Structural Steel Buildings, and these Contract Documents. Certification under the AISC Quality Certification Program for Complex Building Structures for fabricators and/or under the AISC Erector Certification Program for erectors is recommended.
 - 3. Certification of Welders: All shop and field welding shall be executed by AWS Certified welders who have been specifically certified for the type of work to be performed. Certifications shall be considered current if dated within the past 12 months. Welders will be considered certified if they have been certified by AWS and their work records are current within every 6-month period thereafter, as required by AWS. Certifications and records must comply with AWS standards. Certifications and appropriate records must be provided to the Architect/Engineer prior to beginning work.
- F. Erector: Company specializing in performing the work of this section with minimum 10 years of documented experience.

- G. Design connections not detailed on the drawings under direct supervision of a Professional Structural Engineer experienced in design of this work and licensed in the State in which the Project is located.
- H. Welding: Qualify procedures and personnel according to AWS D1.1, "Structural Welding Code-Steel."
- I. Comply with applicable provisions of the following specifications and documents:
 - 1. AISC's 360-10 "Specification for Structural Steel Buildings--Allowable Stress Design and Plastic Design," and including the "Commentary of the AISC Specification," and the current supplements.
 - 2. RCSC's "Specification for Structural Joints Using ASTM A325 or ASTM A490 Bolts."

1.05 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. Handle, transport and stack all materials carefully to prevent deformation or damage. Store all structural steel members carefully on substantial timbers and blocking, so arranged that the steel will be free from the earth and properly drained, preventing any splattering with dirt or accumulation of water in or about the steel. Take care to prevent the accumulation of mud, or other foreign matter on the steel. Such accumulation shall be completely removed prior to erection.
- B. Deliver all steel pieces to the site in the sequence required for efficient erection on schedule. The importance of timely sequencing of steel deliveries for on-schedule steel erection is emphasized due to the nature of this fast-track project and the impact on all following construction trades and Owner daily operations.
- C. Store materials to permit easy access for inspection and identification. Keep steel members off ground and spaced by using pallets, dunnage, or other supports and spacers. Protect steel members and packaged materials from erosion and deterioration.
 - 1. Do not store materials on structure in a manner that might cause distortion, damage, or overload to members or supporting structures. Repair or replace damaged materials or structures as directed.
- D. Store fasteners in a protected place in sealed containers with manufacturer's labels intact.
 - 1. Fasteners may be repackaged provided Owner's testing and inspecting agency observes repackaging and seals containers.
 - 2. Clean and relubricate bolts and nuts that become dry or rusty before use.
 - 3. Comply with manufacturers' written recommendations for cleaning and lubricating ASTM F 1852 fasteners and for retesting fasteners after lubrication.

1.06 COORDINATION

- A. Furnish anchorage items to be embedded in or attached to other construction without delaying the work. Provide setting diagrams, sheet metal templates, instructions, and directions for installation.
- B. Coordinate selection of shop primers with topcoats to be applied over them. Comply with paint and coating manufacturers' recommendations to ensure that shop primers and topcoats are compatible with one another.

PART 2 PRODUCTS

ALL PRODUCTS AND MANUFACTURERS LISTED IN THIS SPECIFICATION ARE ESTABLISHING A BASIS OF DESIGN. OTHER PRODUCTS AND MANUFACTURERS OF EQUAL QUALITY MAY BE SUBMITTED FOR REVIEW AND APPROVAL. THE INTENT IS NOT TO LIMIT PRODUCTS AND MANUFACTURERS USED TO THOSE IDENTIFIED IN THESE SPECIFICATIONS.

2.01 MATERIALS

- A. Steel Angles and Plates: ASTM A36/A36M.

- B. Steel W Shapes and Tees: ASTM A992/A992M.
- C. Rolled Steel Structural Shapes: ASTM A992/A992M.
- D. Cold-Formed Structural Tubing: ASTM A500/A500M, Grade C.
- E. Steel Bars: ASTM A108 Grade 60.
- F. Structural Bolts and Nuts: Carbon steel, ASTM A307, Grade A and galvanized in compliance with ASTM A153/A153M, Class C.
- G. Tension Control Bolts: Twist-off type; ASTM F3125/F3125M.
- H. Unheaded Anchor Rods: ASTM F1554, Grade 36, plain, with matching ASTM A563 or ASTM A563M nuts and ASTM F436/F436M Type 1 washers.
- I. Headed Anchor Rods: ASTM A 307, Grade C, plain.
- J. Load Indicator Washers: Provide washers complying with ASTM F959 at connections requiring high-strength bolts.
- K. Welding Materials: AWS D1.1/D1.1M; type required for materials being welded.
- L. Shop and Touch-Up Primer: Fabricator's standard, complying with VOC limitations of authorities having jurisdiction.
- M. Touch-Up Primer for Galvanized Surfaces: Fabricator's standard, complying with VOC limitations of authorities having jurisdiction.
- N. Structural steel W-shapes shall be newly rolled steel conforming to ASTM A992-04a or ASTM 572-04 with special requirements, Grade 50 or ASTM A913-04, Grade 50 Steel. Other structural steel shapes and plates shall be newly rolled steel conforming to ASTM A36/A-04 or ASTM A572-04, Grade 50. Structural tubes ASTM A500-07, Grade B with yield strength = 46 KSI. Structural pipes ASTM A53-07, Grade B with yield strength = 35 KSI.
- O. Structural shapes and plates shall be fabricated from newly rolled (milled) one-piece sections without splices, unless specifically noted otherwise on the structural contract drawings.
- P. High strength bolts shall conform to ASTM A325 (or ASTM A1852 - twist-off) or ASTM A490, as shown on the drawings. Nuts shall conform to ASTM A563 and hardened washers shall conform to ASTM F436, unless specifically indicated otherwise.
- Q. Anchor bolts/rods shall conform to ASTM A36/A36M, ASTM F1554 - Grades 36, 55, and 105, ASTM A354, or ASTM A449 with ASTM A563 Heavy Hex nuts and ASTM F436 hardened washers, Grade A, as shown on drawings.
- R. All welding shall be performed using E70XX electrodes, except E60XX series electrodes may be used for steel decking. All electrodes shall have a Charpy V-notch toughness rating equal to or exceeding 20 ft-lbs. at (-20) degrees Fahrenheit.
- S. Deformed Bar Anchors (DBA): All DBA'S shall comply with ASTM A496
- T. Headed Stud Anchors (HSA): Manufacture all HSA's in conformance with ASTM A108 with dimensions complying with AISC Specifications.
- U. Provide all HSS sections with a 1/4" (min.) thick full size closure plate, unless noted otherwise.

2.02 FABRICATION

- A. Shop fabricate to greatest extent possible.
- B. Space shear stud connectors as indicated on the drawings.
- C. Continuously seal joined members by continuous welds. Grind exposed welds smooth.
- D. Fabricate connections for bolt, nut, and washer connectors.
- E. Develop required camber for members.

- F. Provisions for attachment of other materials: punch and drill steel for attachment of other materials indicated on the drawings or noted in the specification to be attached to the steel.
- G. Connections for structural steel members shall comply with these specifications and the structural contract drawings, unless specific written approval is given by the Structural Engineer of record.
- H. Shop Connections: All shop fabricated connections shall be welded (and/or bolted) using bearing type bolts or friction type, high strength bolts, installed by the modified turn-of-the-nut method, unless otherwise indicated.
- I. Welding:
 - 1. Shop welding shall be done by either metal-arc welding or submerged arc-welding.
 - 2. Groove welds shall have complete penetration unless otherwise noted on the drawings.
 - 3. Minimum Welds: All intersecting steel shapes that are not bolted shall be connected by a fillet weld, all around, unless specifically noted otherwise. All welds shall conform to AISC Specifications. Fillet weld sizes that are not shown shall be 1/16" less than the thinnest of the connected parts for thicknesses 1/4" and larger. Fillet welds on pieces less than 1/4" shall be of the same size as the thinnest of the connected parts.
 - 4. Reinforcing Bars: Do not weld reinforcing bars, except as specifically detailed in the contract documents. In such cases, use only AWS standards. Do not substitute reinforcing bars for deformed bar anchors (DBA's), machine bolts, or headed stud anchors (HSA's).
- J. Oxygen Cutting: Manual oxygen cutting shall be done only with a mechanically guided torch. Alternatively, an unguided torch may be used provided that cut is not within 1/4" of the finished dimension and the final removal is completed by chipping or grinding to provide a surface quality equal to that of the base metal edges. The use of oxygen-cut holes for bolted connections will not be permitted; components prepared in this manner will be rejected.
- K. No oversize holes may be used on bolted connections except where specifically approved.
- L. Identification: Structural steel members shall have assigned positions and identification mark or symbol, plainly indicated thereon near one end. Marks shall agree with those given on the shop drawings and erection drawings relating to or calling for the members. Marking should be accomplished in such a way that identification mark will not bleed through finish paint.

2.03 FINISH

- A. Prepare structural component surfaces in accordance with SSPC-SP 3 10.
- B. Shop prime structural steel members. Do not prime surfaces that will be fireproofed, field welded, in contact with concrete, or high strength bolted.
 - 1. Galvanize structural steel members to comply with ASTM A123/A123M. Provide minimum 1.7 oz/sq ft galvanized coating.
- C. Steel to be Painted:
 - 1. Generally, the structural steel shall receive one shop coat of primer paint. See Section 09 9000 - Painting and Coating, 09 9113 - Exterior Painting, or 09 9123 - Interior Painting.
 - 2. Thoroughly clean steel to be painted.
 - 3. Surfaces requiring paint shall be painted only to within two inches of any field weld or friction type, high strength bolted connection. If for any reason the surface to be field welded or bolted is painted, such paint shall be completely removed to within the stated limits before field welding or bolting.
- D. Steel to be Left Unpainted:
 - 1. Contact surfaces (e.g., high strength bolted connections and welded connections).
- E. Shop Painting:
 - 1. After steel has been properly prepared as specified above, apply primer paint to dry steel surfaces by brush, spray or roller, insuring no running or sagging in accordance with

- manufacturer's directions.
2. The coverage rate per coat shall not be more than 400 square feet per gallon resulting in a wet film thickness of four (4) mils and providing a minimum dry film thickness of two (2) mils.

2.04 SOURCE QUALITY CONTROL

- A. Provide shop testing and analysis of structural steel as required per the Quality Assurance Plan.
- B. Welded Connections: Visually inspect all shop-welded connections using one of the following:
 1. Radiographic testing performed in accordance with ASTM E94.
 2. Ultrasonic testing performed in accordance with ASTM E164.
 3. Liquid penetrant inspection performed in accordance with ASTM E165/E165M.
 4. Magnetic particle inspection performed in accordance with ASTM E709.
- C. The contractor shall maintain and pay for his own quality control and inspection of all shop work. Records of tests shall be readily available for examination by the Architect/Engineer or his designated representative and copies of which shall be turned over to the Architect/Engineer upon request.
- D. Acceptance at the shop shall not prevent final rejection at the job site if work is found to be defective in any way.
- E. Unless otherwise noted, when compliance with the referred specifications, etc., or this specification, is specified for materials or a manufactured or fabricated product, the contractor, if requested, shall furnish the Architect/Engineer with an affidavit from the manufacturer or fabricator certifying that the material product delivered to the project meets the requirements of the contract document.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that conditions are appropriate for erection of structural steel and that the work may properly proceed.

3.02 ERECTION

- A. Set structural steel accurately in locations and to elevations indicated and according to:
 1. AISC 303 and AISC 360
 2. OSHA Construction Industry Standards (29 CFR 1926)
 3. Specified requirements.
 4. AISC "Code of Standard Practice for Steel Buildings and Bridges".
- B. Allow for erection loads, and provide sufficient temporary bracing to maintain structure in safe condition, plumb, and in true alignment until completion of erection and installation of permanent bracing.
- C. Field weld components and shear studs indicated on shop drawings.
- D. Use carbon steel bolts only for temporary bracing during construction, unless otherwise specifically permitted on drawings. Install high-strength bolts in accordance with RCSC (HSBOLT) "Specification for Structural Joints Using High-Strength Bolts".
- E. Do not field cut or alter structural members without approval of Architect/Engineer.
- F. After erection, prime welds, abrasions, and surfaces not shop primed, except surfaces to be in contact with concrete.
 1. Field connections shall be one of the following:
 2. Bolted connections using ASTM A307 bolts brought up to and beyond snug tight after faying surfaces are in contact. A307 to be used only in miscellaneous steel members.
 3. High strength steel bolts conforming to ASTM A325.

- a. Installation shall be performed by using pneumatic powered impact wrenches with sufficient capacity and an adequate supply of compressed air.
 - b. Installation shall be performed in accordance with the turn-of-the-nut method outlined in the AISC "Specification for Structural Joints Using ASTM A325 or ASTM A490 Bolts", with the following modifications:
 - 1) Use a hardened washer under either the bolt head or nut, whichever is turned in tightening.
 - 2) Qualifications of high strength bolting procedures and operations shall be as specified under "Qualifications" in this section.
 - c. Pre-calibrated bolts similar and equal to Le June bolts may be substituted. Submit sample and manufacturer qualifications for approval by Architect/Engineer.
4. Welding:
- a. Field welding shall be executed in accordance with all the requirements under "Fabrication: Welding" in this section excepting those requirements which manifestly apply to shop conditions only.
 - b. Field welding shall be accomplished by using either the shielded metal arc (SMAW) or the flux-cored arc (FCAW) welding process.
- G. Special provisions for full penetration welds used in moment frames: These special provisions shall apply to shop or field welded moment connections. Welding methods, procedures and quality control shall comply with AWS D1.1-2010 and the following:
1. Tack weld quality shall comply with AWS D1.1/D1.1M, Section 3.3.7.
 2. Arc strikes, gouges and other imperfections within or adjacent to the joint shall be repaired or removed.
 3. Preheat and interpass requirements shall be as outlined in AWS D1.1/D1.1M, Section 4.2.
 4. Use weld tabs and finish to a smooth contour, per AWS D1.1, Section 3.12.3.
 5. Backer bars shall be removed from the beam, bottom flange, connections to remove all slag and cracks. Weld the back-gouged region and finish welding using a reinforcing fillet weld, according to AWS D1.1/D1.1M, Section 3.13.4.
 6. Cracks, Gouges, grooves and notches will not be permitted in the joint area.
- H. Oxygen cutting in the field shall be executed in accordance with the requirements under "Fabrication: Oxygen Cutting" in this section.
- I. Templates shall be furnished for all anchor bolts. Furnish instructions for settling of anchors and bearing plates and ascertain that items are properly set during the progress of the work.
- J. Anchor bolts set by others shall be verified for proper size and accurate location prior to erection of structural steel work.
- K. Framing: As erection progresses, the work shall be securely connected to take care of all dead load, wind and erection stresses. Temporary bracing shall be introduced wherever necessary to take care of all loads to which the structure may be subjected, including erection equipment and its operation. Such bracing shall be left in place as long as may be required for safety. It shall finally be removed by the contractor as part of his equipment.
- L. Fastening of splices of compression members shall be done after the abutting surfaces have been brought completely into contact. Bearing surfaces and surfaces that will be in permanent contact shall be cleaned prior to final assembly of members.
- M. Tolerances: All members shall be aligned, leveled and adjusted accurately prior to final fastening. Tolerances shall conform to the AISC "Code for Standard Practice."
- N. All members shall be cut neat, true bevel or square and should be erected true and flush without twists and open joints. Light drifting to draw holes together will be permitted. Reference should be made to the code and specifications listed under General Requirements which shall govern all phases of fabrication, details, and erection and workmanship. Responsibility for all errors of fabrication and proper fitting of the various members shall be assumed by this

contractor.

O. Framing and Bracing:

1. All structural steel shall be erected true and plumb. Temporary shoring and bracing shall be used wherever necessary and shall be adequate for all loads to which the structure may be subjected, including wind and erection equipment and operation of same. Leave temporary bracing and shoring in place as long as may be required for safety, and until final framing construction is completed.
2. No final connections shall be made until the structure has been properly aligned. All temporary flooring, planking and scaffolding necessary in connection with the erection of the structural steel, or the support of erection machinery shall be provided as part of the erection work. The temporary floors and scaffolding shall conform to the requirements of all laws governing safety regulations.
3. Drifting done during assembly shall not distort the metal or enlarge the holes. Mismatching of holes greater than 3/32 inch shall require reaming for the next larger bolt. Mismatching of holes greater than 1/8" shall be cause for rejection.

P. Defective Work:

1. Work found to be defective, missing or damaged shall be immediately replaced with proper work. Such replaced work and the inspection for same shall be at the expense of the Contractor.
2. Straightening of any material, if necessary, shall be done by a process and in a manner that will not injure the materials, and which is approved by the Architect/Engineer. Sharp kinks or bends shall be cause for rejection. Heating will not be allowed.
3. Delamination and other rolling defects in structural shapes and plates shall be cause for rejection when, in the judgment of the Architect/Engineer repairs are not feasible or acceptable.
4. If defects or damaged work cannot be corrected in the field, the material shall be returned to the shop or new parts furnished, as the Architect/Engineer directs; the Contractor shall replace all work at his own expense.

3.03 TOLERANCES

- A. Maximum Variation From Plumb: 1/4 inch per story, non-cumulative.
- B. Maximum Offset From True Alignment: 1/4 inch.

3.04 FIELD QUALITY CONTROL

- A. An independent testing agency will perform field quality control tests, as specified in Section 01 4000 - Quality Requirements.

3.05 TESTING AGENCY

- A. Testing Agency - The Owner shall engage the services of an independent testing laboratory to perform the following services, the cost of which shall be paid by the Owner.
- B. Prior to the fabrication and erection of any structural steel, a meeting shall be arranged by the Contractor for the Architect/Engineer, Steel Erector, and Testing Laboratory Inspector to review qualifications of welders, bolt tightening procedure, stud welding procedure, and procedures the Testing Laboratory Inspector(s) will follow.
 1. The installation and tightening of bolts shall be observed by the Testing Laboratory Inspector to determine that the selected bolt tightening procedure is properly followed and he shall test all field connections to determine that all bolts are tightened in accordance with the ASTM A325 Specifications.
 2. Welding inspection shall include one hundred percent (100%) testing by ultrasonic method of all beam to column full penetration welds. Welding inspection shall also include one hundred percent (100%) testing by ultrasonic method, or by other approved equivalent methods conforming to AWS D1.1, or all groove welds which are part of the seismic force resisting systems. The cost of retesting any defective welds shall be borne by the

Contractor. A qualified welding inspector shall be employed to perform the duties as outlined in the AWS D1.1 Section 6, Inspection. Welding inspection shall also include visual checking of all critical fillet welds.

3. The nondestructive testing rate for an individual welder may be reduced to 25 percent with the concurrence of the Structural Engineer of Record, provided that the rejection rate is demonstrated to be 5 percent or less of the welds tested for the welder.
- C. Promptly furnish to the Architect/Engineer and Owner the reports of the Testing Laboratory on the above testing.
 - D. Testing Coordination - Cooperate with and facilitate inspection and testing by the testing agency. It is recommended that the steel erector contractor and steel fabricator contact the approved testing lab, of the Owner's choice prior to beginning any welding. A program of joint preparation and welding procedures should be worked out between the two parties before the welding is started so that correct welds will be made from the beginning. Furnish the testing agency, upon request with the following:
 1. Complete sets of approved erection drawings, detailed shop drawings, schedules and corrective work procedures at the fabrication shop or shops and in the field.
 2. Cutting list, order lists, material bills, and shopping lists.
 3. Information as to time and place of all rollings and shipment of material to shops.
 4. Assistance for testing materials and proper facilities for inspection of the work, in the mill, shop, and field.

3.06 TESTS AND INSPECTIONS

- A. All structural steel materials shall be tested, and all welding and fabrication shall be inspected by the Owner's testing laboratory. The Owner may test all welds by means of X-Ray, ultrasonic, or any other appropriate, non-destructive procedure. Additional testing required as a result of corrective measures to correct defects shall be paid by the Contractor. Testing shall comply with the requirements of AWS 7. A copy of all weld testing reports shall be provided to the structural engineer.
- B. Structural Steel: Mill analysis and test reports certified and properly executed by the manufacturer will constitute sufficient evidence of conformity with the specifications. Contractor shall identify steel as to heat number and furnish the testing laboratory mill tests and manufacturer's certification for each heat of steel. If the material cannot be identified or its source is questionable, one set of tension and bend tests shall be made by the testing laboratory for each 5 tons or fractional part thereof of each size.
 1. The cost of all tests, including sampling and machining of test coupons, will be paid by the Owner.
 2. The Contractor shall cooperate with testing engineers and provide all materials required to take coupons for testing.
- C. Fabrication Inspection: All fabrication of structural steel shall be inspected by the fabricator. This inspection shall consist of, but shall not necessarily be limited to, the following:
 1. Visually inspect steel shapes and plates for existence of defects, such as laminations and non-metallic inclusions. Use ultrasonic equipment to determine extent of defects.
 2. Confirm that sections used conform to dimensional standards specified.
 3. Ultrasonic testing of base plates, column flanges at beam and girder moment connections and bracing connections, and top and bottom flanges of beams at bracing connections shall be performed in accordance with ASTM A578-80. For column flanges, inspect an area extending 6" above and 6" below point where beam and/or girder flanges are attached. For column and beam flanges, inspect an area extending 6" beyond each end of bracing connections where attached to the flanges. Any recordable discontinuity causing complete loss of back reflection and which cannot be encompassed within a 3-inch diameter circle or one-half the plate thickness, whichever is larger, is unacceptable. Inspect connection areas on all beams and columns.

- D. **Welding Inspection:** Welding shall be inspected by a qualified inspector employed by the testing laboratory. This inspector shall confirm the qualification of welders, the use of AWS qualified procedures, the manufacturer's recommended use of automatic equipment, and the proper use of preheat, if required.
1. All complete penetration groove welds and partial penetration groove welds shall be subject to ultrasonic testing by qualified technician, who shall operate the equipment, examine the welds and maintain a record of all welds examined, defects found and disposition of each defect. All defective welds shall be repaired by the Contractor and retested with ultrasonic equipment at the expense of the Contractor.
 2. Initially, all welds requiring ultrasonic testing shall be tested at the rate of 100% in order to establish the qualifications of each individual welder.
 3. When ultrasonic indications arising from the weld root can be interpreted as either a weld defect or the backing strip itself, the backing strip shall be removed at the expense of the Contractor, and if no root defect is visible, the weld shall be retested. If no defect is indicated on this retest, and no significant amount of the base and weld metal has been removed, no further repair of welding is necessary. If a defect is indicated, it shall be repaired by the Contractor and retested at the expense of the Contractor.
 4. The ultrasonic instrumentation shall be calibrated by the technician to evaluate the quality of the welds in accordance with AWS D1.1.
 5. Headed stud anchor (HSA's) welding and deformed bar anchor (DBA) welding shall conform to the manufacturer's specifications. Welding shall be tested to comply with AWS D1.1, Section 7.6 through 6.8 and Appendix K of the AISC Specifications.
 6. Where runoff tabs are used, they shall be removed and the edges shall be ground smooth and shall be visually inspected in conformance with AWS D1.1, Subsection 8.15.
- E. **Erection Inspection:** All erection of structural steel shall be inspected by the testing laboratory. Provisions under Fabrication and Welding Inspection shall apply.
1. All welding shall be inspected by the testing laboratory. Butt and complete penetration welds shall be ultrasonically tested as per provisions under Welding Inspection.
 2. High strength bolting shall be inspected by the testing laboratory in conformance with the Specifications for Structural Joints using ASTM A325 and ASTM A490 bolts, as approved by the Research Council on Riveted and Bolted Structural Joints of the Engineering Foundation.
- F. Welded connections between the primary members of Intermediate and Special Moment Resisting Steel Frames (IMRSF) and (SMRSF) shall be tested for compliance according to SBC Section 1708.2 and these Contract Specifications and Plans. Inspection shall be done by a qualified testing inspector. As a minimum, the testing shall include the following:
1. All complete penetration groove welds contained in joints and splices shall be tested 100%, either by ultrasonic testing or by radiography.
 2. Partial penetration groove welds, when used in column splices, shall be tested either by ultrasonic testing or radiography. A minimum of 50% of these welds shall be tested.
 3. Any material discontinuities shall be accepted or rejected on the basis of the defect rating in accordance with the AWS Standards as they refer to the testing on AWS D1.1-84, Chapter 6, excluding Sections 6.1 through and including 6.6. All deficient welds shall be corrected and tested at no additional cost to the Owner.
- G. **Source Quality Control:**
1. The Contractor shall maintain his own quality control and inspection of all shop work. Records of tests shall be readily available for examination by the Architect/Engineer or his designated representative and copies of which shall be turned over to the Architect/Engineer upon request.
 2. Acceptance at the shop shall not prevent final rejection at the job site if work is found to be defective in any way.

3. Unless otherwise noted, when compliance with the referenced specifications, etc., or this specification is specified for materials or a manufactured or fabricated product, the Contractor, if requested, shall furnish the Architect/Engineer with an affidavit from the manufacturer or fabricator certifying that the material product delivered to the project meets the requirements of the Contract Documents.

END OF SECTION

SECTION 33 1416
SITE WATER UTILITY DISTRIBUTION PIPING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Pipe and fittings for site water lines including domestic water lines.
- B. Valves.

1.02 RELATED REQUIREMENTS

- A. Section 03 3000 - Cast-in-Place Concrete: Concrete for thrust restraints.
- B. Section 31 2316.13 - Trenching: Excavating, bedding, and backfilling.

1.03 PRICE AND PAYMENT PROCEDURES

- A. Pipe and Fittings: By the linear foot. Includes hand trimming excavation, pipe and fittings, bedding, concrete thrust restraints, and to provide utility water source.
- B. Valves: By the unit. Includes valve, fittings and accessories.

1.04 REFERENCE STANDARDS

- A. ASME B16.22 - Wrought Copper and Copper Alloy Solder-Joint Pressure Fittings.
- B. ASTM A307 - Standard Specification for Carbon Steel Bolts, Studs, and Threaded Rod 60 000 PSI Tensile Strength.
- C. ASTM A563/A563M - Standard Specification for Carbon and Alloy Steel Nuts (Inch and Metric).
- D. ASTM B88 - Standard Specification for Seamless Copper Water Tube.
- E. ASTM D1785 - Standard Specification for Poly(Vinyl Chloride) (PVC) Plastic Pipe, Schedules 40, 80, and 120.
- F. ASTM D2466 - Standard Specification for Poly(Vinyl Chloride) (PVC) Plastic Pipe Fittings, Schedule 40.
- G. ASTM D2855 - Standard Practice for the Two-Step (Primer and Solvent Cement) Method of Joining Poly (Vinyl Chloride) (PVC) or Chlorinated Poly (Vinyl Chloride) (CPVC) Pipe and Piping Components with Tapered Sockets.
- H. ASTM D3139 - Standard Specification for Joints for Plastic Pressure Pipes using Flexible Elastomeric Seals.
- I. AWWA C105/A21.5 - Polyethylene Encasement for Ductile-Iron Pipe Systems.
- J. AWWA C111/A21.11 - Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings.
- K. AWWA C115/A21.15 - Flanged Ductile-Iron Pipe with Ductile-Iron or Gray-Iron Threaded Flanges.
- L. AWWA C508 - Swing-Check Valves for Waterworks Service, 2-In. Through 48-In. (50-mm Through 1,200-mm) NPS.
- M. AWWA C509 - Resilient-Seated Gate Valves for Water Supply Service.
- N. AWWA C600 - Installation of Ductile-Iron Mains and Their Appurtenances.
- O. AWWA C602 - Cement-Mortar Lining of Water Pipelines in Place - 4 In. (100 mm) and Larger.
- P. AWWA C606 - Grooved and Shouldered Joints.
- Q. AWWA C900 - Polyvinyl Chloride (PVC) Pressure Pipe and Fabricated Fittings, 4 In. through 60 In. (100 mm through 1500 mm).
- R. AWWA C901 - Polyethylene (PE) Pressure Pipe and Tubing, 3/4 In. (19 mm) Through 3 In. (76 mm), for Water Service.

1.05 ADMINISTRATIVE REQUIREMENTS

- A. Preinstallation Meeting: Conduct a preinstallation meeting at least one week prior to the start of the work of this section; require attendance by all affected installers.
- B. Sequencing: Ensure that utility connections are achieved in an orderly and expeditious manner.

1.06 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Submit manufacturer's technical product data and installation instructions for potable water system materials and products.
- C. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.
- D. Project Record Documents: Record actual locations of piping mains, valves, connections, thrust restraints, and invert elevations. Identify and describe unexpected variations to subsoil conditions or discovery of uncharted utilities.

1.07 QUALITY ASSURANCE

- A. Perform Work in accordance with Town of Stanton, TN requirements.
- B. Manufacturer's Qualifications: Firms regularly engaged in manufacture of potable water systems materials and products, of types and sizes required, whose products have been in satisfactory use in similar service for not less than 5 years.
- C. Installer's Qualifications: Firm with at least 3 years of successful installation experience on projects with potable water piping work similar to that required for project.
- D. Codes and Standards
 - 1. Plumbing Code Compliance: Comply with applicable portions of Local Plumbing Code pertaining to selection and installation of potable water system materials and products.
 - 2. Water Purveyor Compliance: Comply with requirements of Purveyor supplying water to project, obtain required permits and inspections.

1.08 DELIVERY, STORAGE, AND HANDLING

- A. Deliver and store valves in shipping containers with labeling in place.

1.09 DESCRIPTION OF WORK

- A. Extent of potable water systems work is indicated on drawings and schedules, and by requirements of this section.

PART 2 PRODUCTS**2.01 WATER PIPE**

- A. Ductile Iron Pipe: AWWA C151:
 - 1. Cement lined, AWWA C104.
 - 2. Bituminous Coated.
 - 3. Unless otherwise noted all pipe joints shall be push-on, bell and socket; rubber gasket; AWWA C111.
 - 4. Pressure Class 350, unless otherwise noted on drawings.
 - 5. Fittings: AWWA C10-12; ductile iron; mechanical joint; cement lined; bituminous coated.
- B. Copper Tubing: ASTM B88, Type K, annealed:
 - 1. Fittings: ASME B16.18, cast copper, or ASME B16.22, wrought copper.
 - 2. Joints: Compression connection or AWS A5.8M/A5.8, BCuP silver braze.
- C. PVC Pipe: Service Lines (1/2"-3" diameter), ASTM D1785, Schedule 40:
 - 1. Fittings: PVC; ASTM D2672
 - 2. Joints: Solvent Weld; ASTM D2855

- D. Cross-Linked Polyethylene (PEX) Pressure Pipe: Service Lines (1/2"-3" diameter); AWWA C904-06:
 - 1. Copper Tube Size (CTS) SDR9
 - 2. Fittings; Compression joint-brass; AWWA C800.
 - 3. Stainless Steel risers required at all fittings.
- E. Trace Wire: Magnetic detectable conductor, clear plastic covering, imprinted with "Water Service" in large letters.

2.02 VALVES

- A. Valves: Manufacturer's name and pressure rating marked on valve body.
- B. Gate Valves: These shall be iron body, resilient-seated gate, non-rising stem type for a design working pressure of 200 psi for valves with diameters of 2"-12" and 150 psi for valves with diameter 14" or greater unless otherwise specified or shown on the plans, conforming to AWWA Specification C509. Each valve shall have "O" ring type stem seal, standard two inch AWWA operating nut, and shall be opened by COUNTER-CLOCKWISE stem rotation unless otherwise specified. Except where otherwise specified, indicated, or required for the application involved, all gate valve ends shall be AWWA Specification C111 mechanical joint type, with plain rubber gaskets. The valve body shall be coated inside and out with an epoxy coating conforming to AWWA Specification C550.
 - 1. Manufacturers:
 - a. Mueller Industries: <https://www.muellerindustries.com>.
 - b. Approved equal.
- C. Swing Check Valves From 2 Inches to 24 Inches:
 - 1. AWWA C508, iron body, bronze trim, 45 degree swing disc, resilient seat renewable disc and seat, flanged ends.
- D. Valve Box Riser Assembly:
 - 1. Description: Valve boxes shall be screw type and shall consist of a base, middle section, top section with cover and intermediate extension sections when required. The top section shall be designed to thread onto the middle section so that the unit can be adjusted to a variable length. The top section shall be designed to receive a circular drop cover. Valve boxes may have extension sections designed to fit between the middle and top section to achieve the required length. A valve box is installed to provide access to the operator of a direct buried valve.
 - 2. Material: The valve box and component parts shall be cast iron in accordance with ASTM-A48 class 20, 30, and 35.

2.03 BEDDING AND COVER MATERIALS

- A. Bedding: As specified in Section 31 2316.13.
- B. Cover: As specified in Section 31 2316.13.

2.04 ACCESSORIES

- A. Anchorages: Provide anchorages for tees, wyes, crosses, plugs, caps, bends, valves. After installation, apply full coat of asphalt or other acceptable corrosion-retarding material to surfaces of ferrous anchorages.
- B. Clamps, straps, rods, bolts and washers meeting the requirements of ASTM A307, ASTM D3953-10, and ASTM F4844.

2.05 IDENTIFICATION

- A. Underground pipe marking and identification shall be in accordance with Section 33 0526 - Utility Identification.

PART 3 EXECUTION**3.01 EXAMINATION**

- A. Verify that building service connection and municipal utility water main size, location, and invert are as indicated.
- B. General: Examine areas and conditions under which potable water system's materials and products are to be installed. Do not proceed with work until unsatisfactory conditions have been corrected in manner acceptable to Installer.

3.02 PREPARATION

- A. Cut pipe ends square, ream pipe and tube ends to full pipe diameter, remove burrs.
- B. Remove scale and dirt on inside and outside before assembly.
- C. Prepare pipe connections to equipment with flanges or unions.

3.03 TRENCHING

- A. See the section on trenching for additional requirements.
- B. Hand trim excavation for accurate placement of pipe to elevations indicated.
- C. Form and place concrete for pipe thrust restraints at each change of pipe direction. Place concrete to permit full access to pipe and pipe accessories. Provide adequate bearing area on undisturbed soil as detailed in the construction plans. Wrap the fitting in 6 mil polyethylene sheeting prior to pouring concrete.
- D. Backfill around sides and to top of pipe with cover fill, tamp in place and compact, then complete backfilling.

3.04 INSTALLATION - PIPE

- A. Maintain separation of water main from sewer 10 ft horizontal; min 18" clear vertical at crossing points.
- B. Group piping with other site piping work whenever practical.
- C. Establish elevations of buried piping to ensure not less than 3 feet of cover.
- D. Install ductile iron piping and fittings to AWWA C600.
- E. Install grooved and shouldered pipe joints to AWWA C606.
- F. Generally, route pipe in straight line; piping may be laid in a curved alignment using joint deflection. Do not over deflect per manufacturers specifications.
- G. Install pipe to allow for expansion and contraction without stressing pipe or joints.
- H. Install access fittings to permit disinfection of water system.

3.05 INSTALLATION - VALVES

- A. Set valves on solid bearing.
- B. Install valves as indicated in the drawings. Insure that valve and operating stem are orientated vertically.
 - 1. Set valve box over the valve, centered and plumb over the operating nut. Ensure that the valve box base is properly supported.
 - 2. Adjust the valve box to final grade.
 - 3. House keeping Pad: Pour an 8"x24"x24" concrete pad around the valve box.
 - a. In non-traffic areas-flush with surrounding grade.
 - b. In paved areas:
 - 1) Rigid pavement - flush with finished grade.
 - 2) Flexible pavement - top of pad 2" below final grade.
 - c. Access lid legend: "WATER"

3.06 FIELD QUALITY CONTROL

- A. Water Main Disinfection shall be performed in accordance with AWWA C651-05 using one of three methods.
1. Tablets (granules) of hypochlorite placed in the main during construction.
 2. Continuous Method: fill the main with a premixed solution of chlorinated water or injection of chlorinated water into the main as it is being filled.
 3. Slug Method: Flow a slug of highly chlorinated water (100 mg/L) at a rate to insure that all parts of the system are exposed to the highly chlorinated water for a period of 3 hours.
 4. The table below presents the contact times and residual chlorine amount for each method:

Chlorination Methods for Disinfecting Water Mains			
Chlorination Method Used	Initial Chlorine Dose (mg/L)	Minimum Contact Time	Minimum Chlorine Resid. (mg/L)
Non-emergency Procedures			
Tablet	25	24	10
Continuous	25	24	10
Slug	100	3	50

5. If the tablet (granules) method is used, care must be taken during construction of the main to ensure that the system does not become contaminated with dirt or other materials during construction.
 6. Initial flushing should be performed before the continuous or slug method is undertaken.
- B. Final flushing of the main shall be performed after the minimum retention time but not before acceptable residual chlorine levels have been reached. Care should be taken to ensure that discharged water with residual chlorine levels does not reach a stream, river or lake.
- C. Bacteriological Testing
1. If the new main is connected directly to the active water distribution system a bacteriological testing must be performed prior to pressure and leak testing of the system.
 2. After final flushing two consecutive sets of water samples, taken at least 24 hours apart shall be taken from the water mains.
 - a. Sample points shall be located a minimum of every 1,200 ft of water main, at each end of the pipe line, and at each branch of the system.
 - b. The samples must be delivered to the lab in a timely manner. Check with the laboratory to confirm handling requirements.
 - c. The sample bottles shall be sealed and labeled and a chain of custody form shall be maintained.
 - d. Upon satisfactory receipt of satisfactory report results from the laboratory copies shall be delivered to the Owner and Engineer.
 - e. Should the test results be unsatisfactory the system shall be re-disinfected and retested as necessary to obtain satisfactory results, no additional cost to the utility.
- D. Hydrostatic Testing: Prior to placing the main in service the system shall be leak tested.
1. Hydrostatic Tests for ductile iron and PVC main: Test at not less than 1-1/2 times working pressure for 2-hours, but no less than 175 psi.
 - a. The test shall be performed in accordance with AWWA C-600-82. The allowable leakage is the quantity of water that must be supplied into the section of pipe being tested to maintain a test pressure within 5 psi of the test pressure after the air in the pipeline has been expelled and the pipe has been filled with water. The pipe will not be accepted if the leakage exceeds the amount determined by the following formula: $L = SD\sqrt{P} / 133,200$, in which L is the allowable leakage, in gallons per hour, S is the length of pipe tested, in feet, D is nominal diameter of the pipe, in inches, and P is the

- average test pressure during the leakage test, in pounds per square inch gauge.
- b. When testing against closed metal-seated valves, an additional leakage per closed valve of 0.078 gallons per hour per inch of nominal valve size shall be allowed.
 - c. When hydrants are in the test section, test against the closed hydrant lead valve.
 - d. If the actual volume of water pumped into the system during the 2 hour test period exceeds the calculated total gallons allowable, the line will have failed. The contractor shall pump the line up to test pressure and visually inspect for leaks at all joints and fittings. Correct all leaks found and re-test.
2. Hydrostatic Tests for HDPE: Test at not less than 1-1/2 times working pressure, but no less than 175 psi.
 - a. The test consists of maintaining the test pressure over a period of 4 hours and then dropping the pressure by 10 psi. If the pressure then remains within 5% of the target value for 1 hour, this indicates there is no leakage in the system.
 - b. Under no circumstances shall the total time under test exceed 8 hours at 1.5 times the system pressure rating. If the test is not complete within this time limit (due to leakage, equipment failure, etc.) the test section shall be permitted to "relax" for 8 hours prior to the next test sequence.

3.07 INSTALLATION OF IDENTIFICATION

- A. General: During back-filling/top-soiling of underground plastic potable water piping, install continuous underground-type plastic line markers, located directly over buried lines at 6" to 8" below finished grade.

3.08 ADJUSTING AND CLEANING

- A. Disinfection of Water Mains: Flush and disinfect in accordance with AWWA C651-05 "Standard for Disinfecting Water Mains."

END OF SECTION



Layne; a Granite Company
 1212 University Street
 Memphis, TN 38108
 T [901-274-2324]
graniteconstruction.com

March 29, 2021

Stanton Water System
 P.O. Box 424
 Brownsville, TN 38012
 Attn: Ben Thornton

RE: Well 2 – Post Pump Repair Report

Dear Ben,

As you are aware, Layne has recently completed repairs to the pump assembly from Well 2 for the Town of Stanton. We are providing below information from the post repair / record of test for your review. Also, find included with this report letter a copy of the record of test along with the pump installation report.

**Town of Stanton
 Preventative Maintenance Testing
 Water Well Number 2
 Pump S/N: 110178
 SE Corner of WTP Yard
 March 25, 2021**

	2021 Post Repair	2020	2017	2015	2013	2011	2009
Static Water Level	32 Feet	30 Feet	30 Feet	34 Feet	32 Feet	32 Feet	32 Feet
GPM	759 GPM	616 GPM	659 GPM	647 GPM	659 GPM	659 GPM	665 GPM
Pumping Level	57 Feet	51 Feet	53 Feet	53 Feet	52 Feet	54 Feet	54 Feet
Specific Capacity	34.50 gpm/ft d.d.	29.33 gpm/ft d.d.	28.65 gpm/ft d.d.	34.05 gpm/ft d.d.	32.95 gpm/ft d.d.	29.95 gpm/ft d.d.	30.23 gpm/ft d.d.
Shut-off Pressure	50 PSI	62 PSI	68 PSI	72 PSI	70 PSI	68 PSI	67 PSI
Amps	-----	32, 33, 29.1	32.4, 33.9, 29.9	30, 29.9, 30.2	30.6, 31.5, 31	31.2, 32, 30.9	31.7, 32.8, 31.2
Water Appearance	Clear	Clear	Clear	Clear	Clear	Clear	Clear
Sand Content	None	None	None	None	None	None	None

Notes: Pump repaired in 2020

The static water level for Well 2 was recorded to be 32 feet below the top of the pump foundation.

This pump is currently pumping 759 GPM and an operating pressure of 10 PSI. This pump is showing a significant improvement since the last test and the recent repairs.

The well's specific capacity was calculated to be 34.50 gpm/ft d.d., which is an indication that water is entering the well freely at this time.

This well is producing clear water, which is sand free.

Both the well and pump appear to be in satisfactory working condition at this time. Continue routine maintenance and retest in one (1) year.

Thank you for this opportunity to be of service to you and Stanton Water System. Should you have any questions regarding this report, please feel free to contact me at 662-719-7448.

Sincerely,

Ryan McMurry

Ryan McMurry
Account Manager
Layne, a Granite Company
ryan.mcmurry@gcinc.com



RECORD OF TEST
Layne; a Granite Company
Memphis, TN

MATERIAL USED
8" Valve; 8" Hose; 8" x 6" Orifice
6" x 8" Reducer
COMMENTS:
No sand or discoloration in the discharge
25 HP; 460 Volt; NPA 32.5
Pump submerged 43' at operating PSI

Post repair Record of Test

WELL NO. 2 PUMP NO. 110178 DATE 03/25/2021

FOR Town of Stanton
CITY Stanton STATE Tennessee
LOCATION SE Corner of WTP Yard

SHUTOFF PRESSURE 50 POUNDS OPERATING GPM 759 AT 10 (POUNDS)
RUNNING PRESSURE 10 POUNDS STATIC LEVEL 32 FEET
LENGTH OF AIRLINE 100 FEET

SPECIFIC CAPACITY	PUMP		AIR LINE GAGE FT.	DRAW DOWN IN. - FT.	INCHES ON 8" x 6" ORIFICE	GPM	VOLTS	AMPS		
	RPM	PRESSURE LBS. - FT.						L1	L2	L3
		50 (Shut Off)	68	---	---	---				
63.44	1,800	40	65	9	13	571				
34.12	1,800	30	48	17	17	580				
36.25	1,800	20	45	20	21	725				
34.50	1,800	10	43	22	23	759				
35.74	1,800	0 (Open)	42	23	27	822	490			
40.81 gpm/ft d.d. Average Specific Capacity										

REPRESENTATIVE FOR OWNER

INSTALLATION REPORT

INSTALLED FOR Town of Stanton CONTRACT NO. 1038211

CITY Stanton COUNTY Haywood STATE TN

LOCATION Southeast Corner - WTP Yard WELL NUMBER 2

DATE INSTALLATION COMPLETED 3 15 2021 NEW INSTALLATION TEST
(MONTH) (DAY) (YEAR) REPAIR INSPECTION

PUMP MAKE Layne SERIAL NO. 110178 TYPE HEAD TF818

TOTAL LENGTH COLUMN 100' SIZE 8" X 1-1/2" X 1" OIL T&C
 WATER LUBRICATED IN 10' LENGTHS

BOWL: SIZE 10" TYPE RCHC NO. OF STAGES 3 CAST IRON BRONZE SST IMPELLERS CAST IRON BRONZE SST BOWL

OPEN CLOSED PORTS SUCTION 6 INCH LENGTH 20' SUCTION STRAINER NO YES BASE PLATE NO YES

IS PUMP SEALED YES NO IF SO, HOW? Grout - Base Plate WHERE? _____

LUBRICATOR: TYPE Oil CAPACITY 5 QUARTS VOLTAGE 460

LENGTH OF AIRLINE 100' SIZE 1/4" PLASTIC COPPER TUBING PIPE STAINLESS STEEL

AIR RELEASE VALVE TYPE Crispin SURFACE DISCHARGE SIZE 6" SCREWED FLANGED

DAYTON COUPLING NO YES PRESSURE GAUGE N/A INCH SPEED N/A SIZE PULLEY N/A FLAT V BELT

CAN WATER BE PUMPED OUTSIDE? Yes TOTAL SETTING 106' IS COLUMN SCREWED OR FLANGED?

MOTOR MAKE US H.P. 25 FRAME NO. 284TP

SERIAL NO. H025P2BLG STYLE AU SPEED 1,780

3 PHASE 60 CYCLES 460 VOLTS. DOES MOTOR HAVE NON-REVERSE RATCHET REVERSE PHASE RELAY

MAKE OF STARTER _____ SIZE _____ TYPE _____

GEAR DRIVE MAKE _____ MODEL _____ RATIO _____ TO _____

SERIAL NO. _____ STANDARD COMBINATION _____ MODEL WITH A _____ MOTOR STAND _____

ENGINE MAKE _____ H.P. _____ STYLE _____ SERIAL NO. _____

SPEED _____ TYPE FUEL _____ STANDARD UNDERGROUND _____ FUEL TANK; SIZE PULLEY _____

MAGNETO MAKE _____ NO. _____ STARTER MAKE _____

STARTER NO. _____ FLEXIBLE SHAFT MAKE _____ LENGTH _____

BELT LENGTH _____ OTHER EQUIPMENT _____

REMARKS: Pump repaired in 2021

STATIC LEVEL 32' FEET _____

CAPACITY OF PUMP 759 GPM AT 10 POUNDS SIGNED Lyle Rickett

