NOTE:
This waiver submission may include references to proprietary items and brand name products. These references have been retained in order to provide context for the waiver submission. EPA does not evaluate a waiver based on a proprietary item but reviews the performance-based specifications for the project/products. As such, any references to brand or proprietary items are reviewed on an "or equal" basis by EPA.

Items and pages may have been intentionally redacted or excluded by the EPA. Contact CWSRFWaiver@epa.gov for more information if necessary.

From: Nguyen, Dan-Tam
To: CWSRFWaiver
Subject: FW: Miami-Dade County (WIFIA) - Product Waiver Request for 24" Seam
Date: Monday, April 05, 2021 6:02:25 PM
Attachments: image001.png
Specification Section 02852 Well Casing.pdf

Please see the formal waiver request from Miami-Dade.

Thanks!
Dan-Tam

From: Ferguson, James (WASD) <James.Ferguson@miamidade.gov>
Sent: Monday, April 5, 2021 4:44 PM
To: Nguyen, Dan-Tam <Nguyen.Dan-Tam@epa.gov>; Shimeles, Taetaye <Shimeles.Taetaye@epa.gov>
Cc: WIFIA_portfolio <WIFIA_portfolio@epa.gov>; Morris-Butler, Angela D. (WASD) <Angela.Morris-Butler@miamidade.gov>
Subject: Miami-Dade County (WIFIA) - Product Waiver Request for 24" Seamless Steel Casing

Miami Dade Water and Sewer Department officially requests an AIS project waiver for 24" steel casing, seamless, as final casing on the municipal injection wells installed for the North and Central District WWTPs (for WIFIA Loans N17129FL and N19146FL). Miami Dade requested and received confirmation from the EPA that they also could not locate 24" casings meeting the design criteria.

Request Summary:

- Description of the foreign and domestic construction materials: **24" steel casing, seamless. This is the final casing for the municipal injection wells for the project. Attached is the product specs for the casing.**
- Unit of measure: **Linear Feet**
- Approximate Quantity: **19,000**
- Location of the construction project: **North District and Central District WWTP, Miami-Dade County, Florida**
- When is the item needed for the project: **by January 2022 for installation**
- A detailed justification for the use of foreign construction materials: **It has come to Miami-Dade Water and Sewer Department's attention that 24-inch seamless steel casing is no longer manufactured in the United States. Previous casing was supplied by [redacted].**

If any further information is required please email me. Thanks for your consideration on this matter.

James B. Ferguson, P.E.
Senior Program Manager
Miami-Dade Water and Sewer Department
3071 SW 38 Avenue, Miami, FL 33146
Phone: 786-552-8756
Cell: 305-613-2249
www.miamidade.gov/water

Connect With Us on Facebook | Twitter | Instagram | YouTube

SECTION 02852

INJECTION AND MONITORING WELL CASING

PART 1 GENERAL

1.01 RELATED WORK

A. **Section 02851 – Well Drilling, Section 02853 – Geophysical Logging, Section 02854 – Grouting, Section 02861 – MIT.**

1.02 SCOPE

A. This section covers the work, materials, and equipment necessary for furnishing and installing steel well casing.

1.03 THE REQUIREMENT

A. Commercial Standards: All work specified herein shall conform to or exceed the requirements of the applicable codes and standards relating to the referenced portions of the following documents only to the extent that the requirements therein are not in conflict with the provisions of this section. Where such documents have been adopted as a code or ordinance by the public agency having jurisdiction, such a code or ordinance shall take precedence.

B. State Standards: SFWMD and FDEP rules and regulations for water wells in the Florida Administrative Code (FAC).

C. Commercial Standards:

1.	ASTM A139	Specification for Electric-Fusion (Arc)-Welded Steel Pipe (Sizes 4-Inch Diameter and Over).
2.	ASTM A36	Standard Specification for Carbon Structural Steel
3.	ANSI/AWS D1.1	Structural Welding Code – Steel.
4.	AWS D10.9	Specification for qualification of welding procedures and welders for piping and tubing
5.	ASTM A53	Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated Welded and Seamless.

6.	ASTM312/A312M	Standard specification for seamless, welded, and heavily cold worked austenitic stainless steel pipes
7.	ASTM409	Standard specification for welded large diameter austenitic steel pipe for corrosive or high temperature service
8.	API 5L	Specification for Line Pipe.
9.	API 5CT	Specifications for casing and tubing
10.	ASTMD1784	Specification for Rigid PVC Compounds and Chlorinated PVC Compounds.
11.	ASTM D2837	Standard Test Method For Obtaining Hydrostatic Design Basis For Thermoplastic Pipe Materials.
12.	ASTM D2996	Standard Specification for Filament-Wound "Fiberglass" (Glass-Fiber-Reinforced Thermosetting-Resin) Pipe.
13.	ASTM D2310	Standard Classification for Machine-Made “Fiberglass” (Glass-Fiber-Reinforced Thermosetting-Resin) Pipe.
14.	ASTM F480	Specification for Thermoplastic Well Casing Pipe and Couplings Made In Standard Dimension Ratios (SDR), SCH 40, and SCH 80.
15.	AWWA A100	Standard for Water Wells.
16.	AWWA C200	Steel water pipe, 6” and larger
17.	AWWA C206	Field Welding of Steel Water Pipe.
18.	AWWA C207	Steel pipe flanges for waterworks service, sizes 4” through 144”
19.	API SPEC. 10D	Specification for Bow-Spring Casing Centralizers.

1.04 CONTRACTOR SUBMITTALS

1. **Welding**: Prior to the start of Work, the CONTRACTOR shall submit a list of the welders it proposes to use during well construction and the type of welding for which each has been

qualified, along with current certification documents for each welder listed.

a. All welders and welding operators shall be qualified at the CONTRACTOR's sole expense by a qualified testing laboratory before performing any welding under this section. Qualification tests shall be in accordance with ANSI/AWS D10.9. Welders and operators shall be qualified for making groove welds in carbon steel and stainless steel pipe in positions 6G for each welding process to be used.

b. CONTRACTOR shall retest any welders at any time ENGINEER considers the quality of the welder's work substandard. When the ENGINEER requests the retest of a previously qualified welder, the labor costs for the retest will be at the CONTRACTOR's expense.

c. CONTRACTOR shall provide appropriate Welding Procedure Specification (WPS) for casing installation and temporary wellhead completion.

d. Welding Inspector Qualifications: A certified welding inspector (CWI) shall be required for the installation of components associated with the carbon steel final casing to stainless steel final casing transition joint, as well as any stainless steel to stainless steel welding and injection and monitoring well wellheads. The CWI shall hold an active CWI certification in accordance with the AWS QCI, Standard for AWS Certification of Welding Inspectors. Alternate welding inspector qualifications require approval by the ENGINEER.

B. **Mill Certificates**: Casing mill certificates showing manufacturing standards, dimensions, wall thickness, heat numbers, hydrostatic test pressure and results, and metallurgical test results shall be submitted to the ENGINEER for all casings no less than seven (7) days prior to the beginning of reaming operations. Heat numbers on casing joints shall be readily visible and legible or the casing will not be accepted by the ENGINEER. Any casing joint not having legible, traceable identification will be rejected.

C. **Fittings**: Provide all fittings; drive shoe and centering guides as specified or as necessary to complete the well.

D. Qualifications of FRP tubing manufacturer authorized installation specialist.

E. FRP joint analyzer makeup tools, dimensions, method of calculating torque on joint, calibration, final report with joints and torque curves for each.

F. **Operations**: The CONTRACTOR shall submit for the ENGINEER's approval plans for cementing operation and casing installation at least 72 hours prior to commencing work on those operations. These plans shall include the following information:

1. Tabulation of casing on Site

2. Length of each section

3. Weight of each joint

4. Cumulative string weight

5. Order of installation of casing sections

6. Locations of centralizers and casing tabs

7. Estimated number of cement stages, cement type to be used and amount of cement to be pumped

PART 2 PRODUCTS

2.01 GENERAL

A. Provide all materials and equipment necessary for joining and installing casing as specified.

B. Steel Casing shall be as follows:.

Injection Wells

	Casing Diameter (nominal inches)		**Casing Wall Thickness (inches)**	**Weight (lbs/Foot)**	**Casing Depth (+/- Feet bls)**
	Inside	**Outside**			
Pit Casing	63.25	64.00	0.375	255.06	TBD
Surface Casing	53.00	54.00	0.500	215.00	350
Intermediate I Casing	43.00	44.00	0.500	232.51	1,100
Intermediate II Casing	33.00	34.00	0.500	179.06	2,100
Final Casing	23.00	24.00	0.500	125.61	2,800

Monitoring Wells

	Casing Diameter (nominal inches)		Casing Wall Thickness (inches)	Weight (lbs/Foot)	Casing Depth (+/- Feet bls)
	Inside	**Outside**			
Pit Casing	33.25	34.00	0.375	142.7	TBD
Surface Casing	23.00	24.00	0.500	125.61	350
Final Casing	15.00	16.00	0.500	82.8	1,150
FRP Tubing	5.43	5.97	0.27	5.1	1,400

2.02 STEEL CASING

A. Pit Casing: The CONTRACTOR shall furnish pit casing at the well Site to isolate surficial deposits from the borehole and to prevent collapse of the drilled hole. Costs for furnishing and installation shall be included in the CONTRACTOR's lump sum mobilization costs. The pit casing shall be installed to such a depth as CONTRACTOR judges necessary to prevent washout or undermining of the drill pad during construction of the wells. The pit casing shall be installed by auger or rotary drilling and shall be cemented in place by the pressure grout method in accordance with **Section 02854 - Grouting**.

B. Pit and surface casings on the injection and monitoring wells shall conform to ASTM A36, ASTM A139, or better. All casing material shall be new or in like-new condition. No used or rusted casing will be accepted. The casing shall have plain ends beveled for welding. Casing joints shall be welded in accordance with ANSI/AWS D1.1.

C. Intermediate Casings I and II on the injection wells and the final casing on the monitoring wells shall meet the requirements of ASTM A139, Grade B. The ends of each joint shall be machine beveled to ensure straightness of each assembled section. Casing joints shall be welded in accordance with ANSI/AWS D1.1. All casing material shall be new or in like-new condition. No used or rusted casing will be accepted.

D. Final casing on the injection wells shall meet the requirements of ASTM A53 Grade B or API 5L Grade B, seamless. The final 10 feet of the injection well final casing shall be new, unused 316L stainless steel

conforming to the requirements of ASTM A312/A312M, Type 316L. The ends of each joint shall be machine beveled to ensure straightness of each assembled section. Casing joints shall be welded in accordance with ANSI/AWS D1.1. All casing material shall be new or in like-new condition. No used or rusted casing will be accepted. The CONTRACTOR shall use an insulation gasket kit or special dissimilar welding rod as approved by the ENGINEER.

2.03 FIBERGLASS REINFORCED PLASTIC (FRP) TUBING

A. Lower Monitoring Zone Tubing: The upper-most section of the lower monitoring zone casing shall be new, unused 316L stainless steel conforming to ASTM A312/A312M, Type 316L. The pipe shall have long threaded and coupled connections that are precision-lathe cut, and factory milled with a pressure tested to 1,570 psi for a minimum of 5 seconds prior to shipping. The FRP tubing shall be connected with top stainless steel tubing using a 316L stainless steel AP18 threaded connection. The FRP shall be new and unused fiberglass reinforced thermosetting aromatic amine cured epoxy resin tubing, and shall conform to the latest revision of ASTM D2996 and ASTM D2310. The tubing string shall be produced by the filament-winding method. The tubing shall have integral joints with API 8-round long external upset end (EUE) or casing integral joint (IJ) threaded connections. Pin ends shall be lathe-cut while box ends are wound-in contiguous with the pipe body. Tubing shall be as manufactured by Future Pipe Industries or an equivalent. The lower monitoring zone casing located between the upper and lower monitoring zone shall be manufactured with a rough coating (minimum of 120 feet). Rough coating applied after the epoxy has cured will not be accepted.

2.04 DRILLABLE BRIDGE PLUG

A. Provide manufactured or fabricated drillable bridge plug that will seal off the pilot hole as directed by the ENGINEER. The drillable bridge plug must be capable of supporting the first few small stages of cement required for setting the drillable bridge plug, dynamic geophysical logging and packer tests.

2.05 FITTINGS

B. Centralizers shall be welded to steel casing and made of the same material as the casing. Centralizers shall be attached to the FRP injection tubing; they shall be integrally molded to the tubing, attached with stainless steel straps style or non-metallic bow spring centralizer, as approved by the ENGINEER. Casing centralizers shall meet the requirements of API Specification 10D. All centralizer groups shall be vertically aligned one above the other in order to permit the passage of tremie pipes alongside the casing to the bottom of the borehole. Casing centralizers shall be fitted on all casings as stipulated under the Execution section.

C. Transition adapter fittings: Transition adapter fittings between FRP tubing and stainless steel wellhead piping shall be fabricated by the casing pipe manufacturer. Adapters shall be pressure rated equivalent to the casing pipe and shall provide NPT threading for acceptance of the stainless steel wellhead piping.

D. Casing Makeup Services:

1. The FRP casing fabricator shall furnish the services of a factory-trained representative during the installation of casing into the dual zone monitoring well. The cost of the fabricator's onsite representative shall be included in the price stated in the Proposal.

2. FRP tubing shall be made up with the Weatherford Model 7625 power tong or equal with integral hydraulic backup specifically made for FRP tubing. The torque on each joint shall be controlled and recorded by a joint analyzer and makeup (JAM) system. These services shall be as provided by Weatherford, or equal, as approved by the ENGINEER. The makeup service shall provide three field copies and a PDF of the casing running summary which presents the makeup and handling information for the casing.

3. It shall be the responsibility of the fabricator's representative to immediately notify the ENGINEER verbally and in writing of casing already damaged or operational procedure which may damage the casing to a degree which would void all or part of the fabricator's guarantee or jeopardize the integrity of the completed project.

PART 3 EXECUTION

3.01 GENERAL

A. The Work shall be performed by a competent crew with equipment that is adequate to complete all phases of well construction.

B. All casing shall be installed by a method appropriate to Drawings as selected by the CONTRACTOR.

C. Casing lengths shall be joined watertight so that the resulting joint shall the same structural integrity as the casing itself.

D. Installation of casing in boreholes:

1. The pit casing may be drilled or augered into place.

2. The depths and lengths for casings shall be as indicated unless otherwise determined by the ENGINEER. Payment will be based on actual quantities furnished, installed, or constructed, in accordance with the schedule of values.

3. All work required to be repeated, resulting from the CONTRACTOR's performance, or lack thereof, including all additional materials, labor and equipment required, shall be furnished at the expense of the CONTRACTOR and no claim for additional compensation shall be made or be allowed therefore, except as specifically provided herein.

E. In the event of any delay, the CONTRACTOR shall not remove the reamer assembly and shall continue reaming/conditioning the borehole until installation of the casing commences.

3.02 CASING

A. Casing Installation: When the reaming operation and geophysical logging has been completed, casing will be installed. The lengths and intervals of each casing type, except for the pit casings, will be determined by the ENGINEER.

B. Tension: The casing shall be suspended in tension from the surface. The bottom of the casing shall be at a sufficient distance above the bottom of the reamed hole as to ensure that none of the casing will be supported from the bottom of the hole. The casings shall be lowered into the borehole open-ended and the weight of the casing shall be supported by the drilling rig. The CONTRACTOR shall certify that the present hook load/weight capacity of the derrick and draw works meets the original manufacture’s specifications or at a minimum 1.5 times the heaviest load anticipated to complete the work. The CONTRACTOR shall submit test results that are certified by a State of Florida licensed Professional Engineer regarding the hook load capacity of the drilling rig before mobilization.

C. Failure to Complete: If the casing cannot be landed in the correct position or at a depth acceptable to the ENGINEER, the CONTRACTOR shall construct another well immediately adjacent to the original location and complete this well in accordance with the Contract Documents at no additional cost to the OWNER. The abandoned hole shall be sealed in accordance with all State of Florida regulations.

D. Collapsed Casing: If the casing should collapse for any reason prior to well completion, it shall be withdrawn and replaced at the CONTRACTOR’s expense.

E. Centralizers:

1. Fabricated centralizers for steel casing shall be constructed of a minimum of 12 inches long, 2 inches wide, a minimum of 0.5-inch thick with a radius of 12 inches and welded with the concave surface against the casing to provide a minimum of 4 inches of clearance around the casing.

2. Spaced at 90 degrees for casing larger than 12-inches in diameter.

3. Vertical separation of centralizers during casing installation are as follows:

   a. One at 5 feet above the bottom end
   b. One at 20 feet above the bottom end
   c. One at 40 feet above the bottom end
   d. One at every joint thereafter.

3.03 WELDING

A. The standards of the American Welding Society, Structural Welding Code (AWS D1.1) shall apply for all welded joint casing and accessories.

B. All welded casing joints shall be made by welders certified in the State of Florida.

C. The certified welder shall perform and be responsible for the integrity of all steel casing welds. The CONTRACTOR must provide the ENGINEER proof of welders' certifications 72 hours before any welding is performed. The reamer assembly shall remain in the borehole to complete reaming or condition the borehole until proof of welders' certification is provided to the ENGINEER.

D. Any surface defects that shall affect the weld shall be chipped or ground out. A power driven wire brush shall be used to thoroughly clean each layer of weld prior to each additional weld metal, including the final pass.

E. Welded joints shall be allowed to cool to less than 430 degrees Fahrenheit before the weld is placed in contact with water. This requirement can be met my maintaining the water level in the well deep enough so the hot weld joint can be lower for the next casing joint and not reach the water. CONTRACTOR shall use temperature melt sticks or infrared thermometer to verify weld temperature to meet the conditions of this requirement.

F. Welding of the casing and pipes shall be done in accordance with the specifications. Weld reinforcement shall be as specified by the AWS code. Upon completion of welding, all weld splatter, flux, slag, and burrs left by attachments shall be removed. Welds shall be repaired to produce a workmanlike appearance, with uniform weld contours and dimensions. The welding rod or wire shall match the material being welded and shall be approved by the ENGINEER.

G. Field Joints: All field joints shall be welded during installation by qualified welders in accordance with the requirements of ANSI/ASW D1.1.

3.04 ALIGNMENT AND SPACING

A. The CONTRACTOR shall align pipe ends to be joined within commercial tolerance limits on diameters, wall thickness, and out-of-roundness. Record the amount of offset and degrees of circumference not matching within 0.10 –inches or less between the two joints. Provide record to the ENGINEER.

B. The CONTRACTOR shall demonstrate that the installed casing is free hanging and can be rotated and reciprocated prior to grouting operations.

C. The shielded metal-arc process shall be used for all carbon steel field welding.

D. No welding shall be performed if there is impingement of any rain or high wind on the weld area, or if the ambient temperature is below 32°F. If the ambient temperature is less than 32°F, local preheating to a temperature that is warm to the hand is required.

E. Tack welds, if not made by a qualified welder using the same procedure as for the completed weld, must be completely removed. Tack welds which are not removed shall be made with an electrode that is the same as, or equivalent to, the electrode to be used for the first weld pass. Tack welds that have cracked shall be removed.

F. Each layer of deposited weld metal shall be thoroughly cleaned prior to the deposition of each additional layer of weld metal, including the final pass, with a power-driven wire brush. Surface defects which will affect the soundness of the weld shall be chipped out or ground out.

END OF SECTION