Design Criteria for
Walnut Street Emergency Bypass Force Main
Jacksonville, FL

PREPARED FOR: JEA

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DATE: December 18, 2018

Background

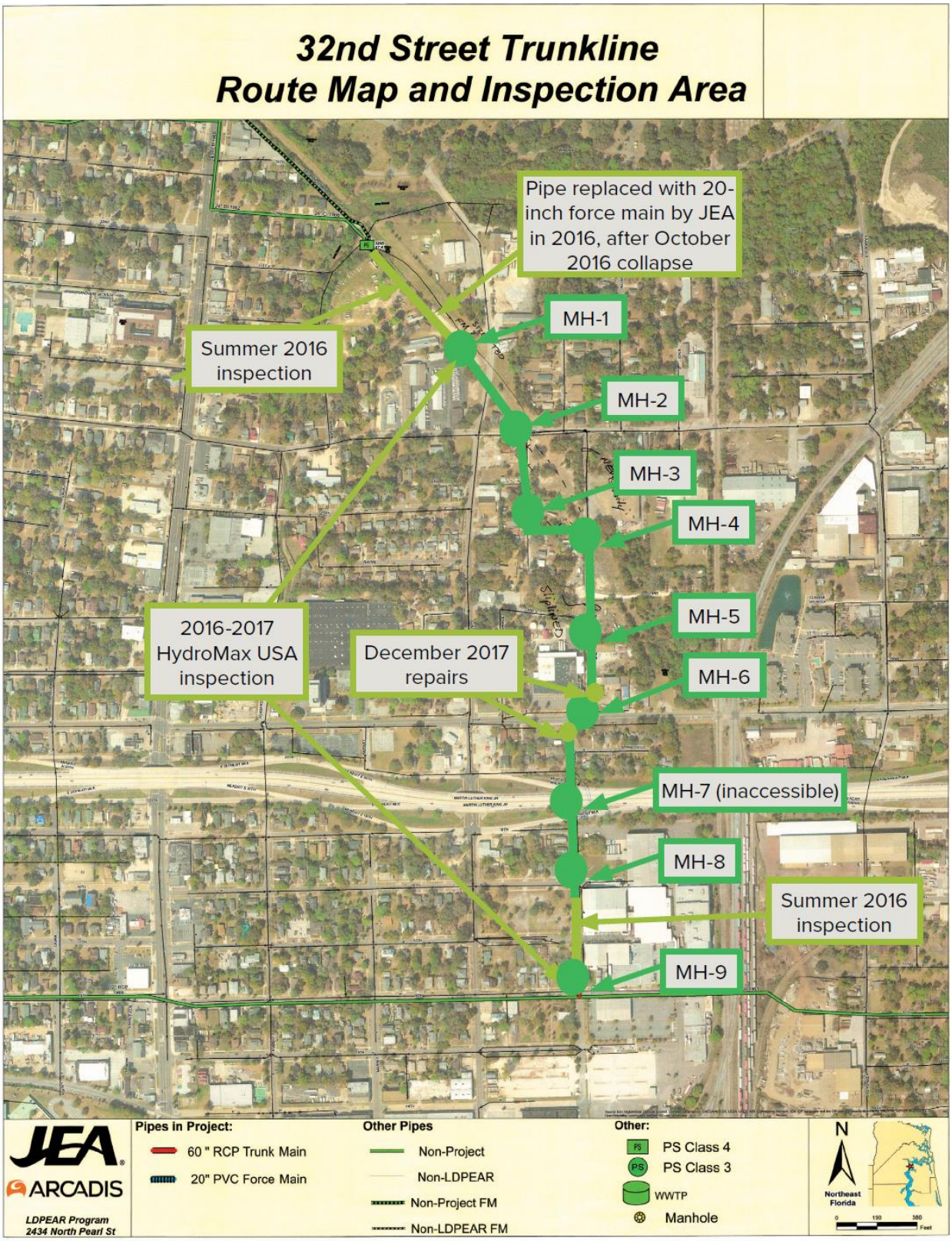
The JEA Walnut Street Gravity Trunk Sewer is a 60-inch gravity trunk sewer which begins at a junction chamber at the discharge of force mains from the 32nd Street PS (named the Hubbard Street PS in the record drawings) and the Norwood PS and extends 4,060 linear feet (LF) to the junction with the Buckman Interceptor at the intersection of 16th Street E and Walnut Street as shown in Figure 1. The upper sections of the trunk sewer, between the junction chamber and 27th Street, are adjacent to the City of Jacksonville S-Line Bike Trail. South of 27th Street, the trunk sewer follows Westlake Avenue, an easement between Westlake Avenue and Walnut Street, and Walnut Street to 21st Street. At 21st Street, the trunk sewer jogs southwest to follow the alignment of Walnut Street and continues south to 16th Street. Between 20th Street and 19th Street, Walnut Street is intersected by the MLK Jr. Parkway, and the trunk sewer crosses beneath the parkway.

The trunk sewer consists of single-cage reinforced concrete pipe with an asphaltic coating that was constructed in the late 1950s. The flow in the trunk sewer is comprised largely of the two force main discharges. However, there are connections with local sewers at 21st Street and 27th Street, which collect flows from approximately 600 LF and 9,000 LF of collection sewer, respectively, and contribute minimal flow relative to the force main discharges.

Beginning in 2015, depressions/cave ins started to develop along the Walnut Street Trunk Sewer and required emergency repairs. CCTV inspections were conducted to assess the condition of the trunk main. These inspections revealed significant loss of the interior asphaltic coating, exposed and protruding aggregate, severely deteriorated pipe reinforcement and some partial pipe collapses.

In late 2016 and early 2017, additional inspections were completed by use of pole cameras lowered into the manholes. The inspections showed several partial collapses and hanging pipe reinforcement. See figure 2 for summary of pipeline inspections completed. It was determined that the piping system was past the point of rehabilitation and that a new piping system installation would be needed. The Walnut Gravity Truck Sewer Replacement project is currently being designed by Mott MacDonald. The new line is being relocated to Liberty Street and the existing 60” gravity sewer will be taken out of service.


Existing Norwood Avenue Pump Station
Existing Norwood Avenue Pump Station 16-inch Force Main
Existing 32nd Street Pump Station
Existing 20-inch Force Main
MH-2
Existing Walnut Street 60-Inch Trunk Sewer
MH-6
Existing 72-inch E. 16th Street Trunk Sewer
Existing 84-inch E. 16th Street Trunk Sewer
MLK Jr. Parkway
TALLULAH/ NORTH SHORE
NORWOOD
PANAMA PARK
PEARL COURT
URBAN CORE
SPRINGFIELD
HOGAN'S CREEK
Gateway Town Center
UF Health Jacksonville
Evergreen Cemetery, Funeral Home and...
Main St N
N Pearl St
N Liberty St
W 44th St
E 44th St
50th St E
E 63rd St
W 27th St
E 27th St
E 21st St
E 17th St
E 12th St
W 13th St
8th St W
E 8th St
Golfair Blvd
Boulevard
Moncrief Rd
Payne Ave
Buffalo Ave
N
JEA Walnut Street 60-Inch Trunk Sewer Replacement - Route Evaluation
Figure 1: Existing Trunk Sewer Facilities

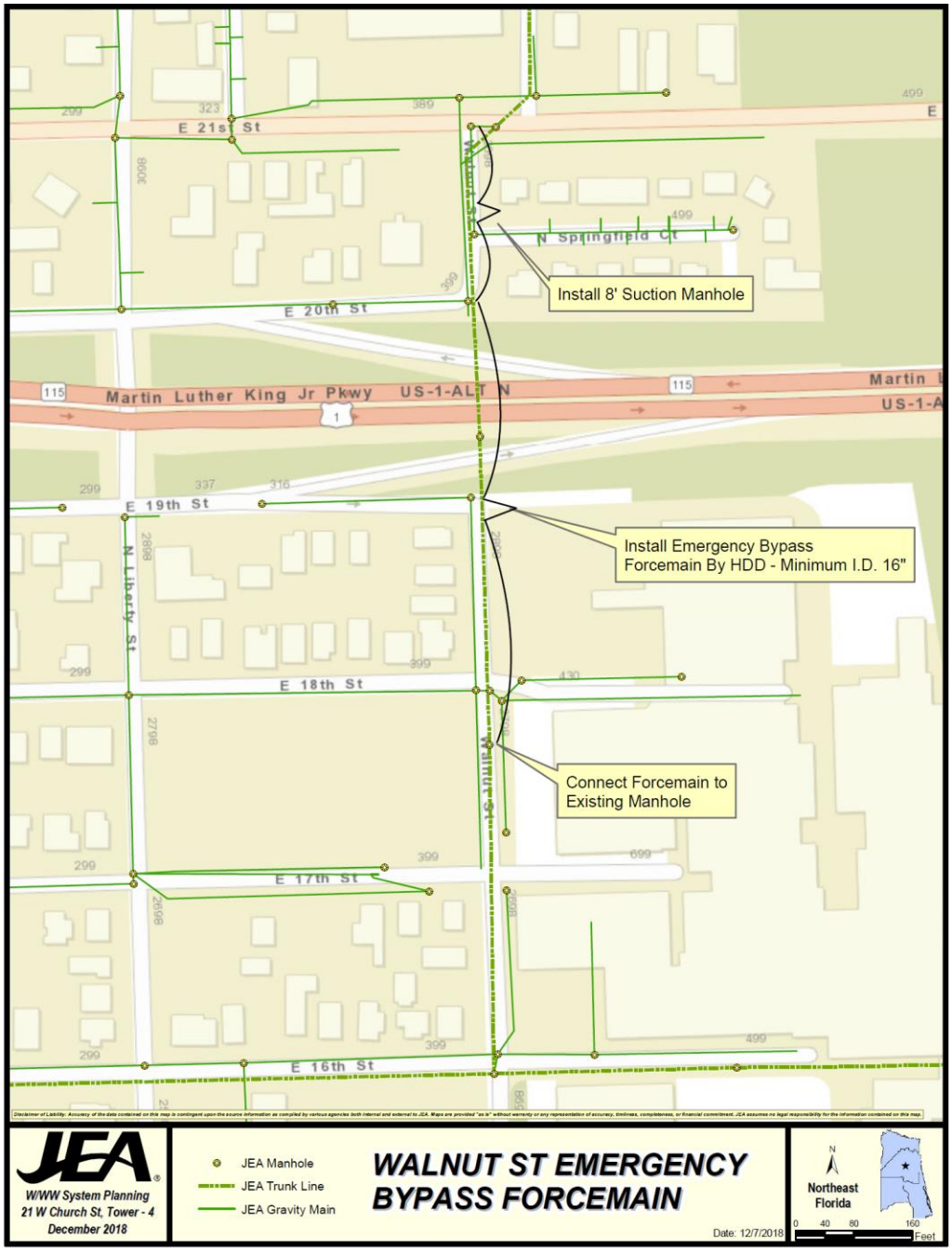


JEA Walnut Street 60-Inch Trunk Sewer Replacement - Route Evaluation

Figure 2: Limits of Previous Pipe Evaluation and Repair

Purpose

The new gravity trunk line is currently in design however, the existing line continues to deteriorate. Any future failures that are accessable would be repaired by JEA personnell except for the crossing under Martin Luther King Jr (MLK) Parkway. JEA crews would not be able to access this area. The purpose of this project is to install a bypass forcemain under MLK Parkway by the horizontal directional drill method, install a "suction" manhole on the north side of the parkway and connect the forcemain to an existing manhole on the southside of the parkway. This new piping system will be used in the event the existing gravity trunk line under MLK fails. JEA would provide bypass pump(s) and subsequent piping necessary.
See figure 3 below:



Existing Information

JEA has gathered existing information which may be useful for the design and construction of the replacement reclaimed water pipeline as follows:

- As-Built plans from the original installation of the Walnut St. gravity trunk sewer
- Record drawing of water mains along Walnut street south of MLK Parkway.
- "Walnut Street Trunk Sewer Replacement -Route Evaluation-Final Technical Memorandum", prepared by Mott MacDonald, June 2018

These documents are attached to this Design Criteria Package for information on background and existing conditions. The Design-Build Company may use this information, but its accuracy is not guaranteed. The Design-Build Company is encouraged to obtain its own information, as necessary, to complete the design and the construrction.

Project Description

The scope of work for the Walnut Street Emergency Bypass Force Main Project includes the installation of approximately 600 LF of sewer force main constructed by horizontal directional drill (HDD) method from the north side of Martin Luther King Jr Parkway to the south side of MLK Parkway. The work also includes installation of new JEA Type G manhole on the north side of MLK Parkway and connecting the new bypass FM to an existing manhole on the south side of MLK. The forcemain on the north side will not terminate in the new structure. The D/B team will leave the north side forcemain with valving and blind flange that can be connected to with pump discharge piping.
The design for all of the items included in this scope of work shall be based on the JEA Water, Wastewater and Reclaimed Water Design Guidelines and constructed per the JEA Water and Sewer Standards Manual, latest edition available on www.jea.com website.

1) Design the carrier pipeline for an internal operating pressure up to 150 psi with a minimum interior diameter of 16 inches. Beginning in 2015, sinkholes, caused by failures of the trunk sewer, along its alignment required
2) emergency repairs. Inspections of the pipe revealed significant losses of asphaltic coating, exposed
3) concrete aggregate and circumferential rebar, and circumferential bars hanging from the pipe crown.
4) Following several additional pipe failures of the trunk sewer in 2016 and 2017, the level of service and
5) reliability of the trunk sewer to serve JEA's customers was determined to be critical and needing
6) immediate response. Designer to verify final sizing and hydraulics with JEA Planning. Hydraulic information can be found in the "Walnut Street Trunk Sewer Replacement - Route Evaluation-Final Technical Memorandum", prepared by Mott MacDonald, June 2018.

7) Furnish and Install pipe materials in accordance in with the JEA Water and Sewer Standards.
8) Design of all facilities in accordance with applicable local, State and Federal standards.
9) Design and construct pipeline within public right of ways. Any private property required to construct the project shall be obtained by the Design Build Team.
10) Obtain all necessary permits and any private property rights required.
11) Furnish of all labor, materials, equipment, and supplies, unless indicated otherwise, for all components in the scope for this project.
12) The design criteria for the project shall comply with the latest versions of the JEA Water, Sewer, and Reclaimed Water Design Guidelines, JEA Water & Sewer Standards Manual, COJ Specifications & Standards, FDOT Specifications & Standards as applicable.
13) Meet/beat all schedule deadlines listed in the RFP.
The proposed project dates are the following:

- Pre-Proposal meeting: January 18, 2019
- Proposals Due: February 12, 2019
- Public Evaluation Meeting: March 4, 2019
- Initial Negotiation Meeting (Draft Scope due): March 15, 2019
- Final Scope and Fee Agreement: April 15, 2019
- Award Design/Preconstruction Services: April 25, 2019
- Contract Executed: May 9, 2019
- Project Kick off meeting: May 14, 2019
- 30% design due & Preliminary GMP: June 21, 2019.
- 90% design documents & GMP Due: July 22,2019
- Award Construction Services: August 8, 2019
- Construction Commence: September 2, 2019
- Construction Substantially Complete: December 1, 2019.