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Subject	Martin Luther King, Jr. Parkway: Fairfax to Brentwood Water Main Replacement Route Study
Project Name	JEA Water/Wastewater Capital Program Management, Task Order L5
Attention	Dave McDermet, JEA
From	Greg Kolb, Jacobs Engineering Group Inc. (Jacobs) Christine Ellenberger, Jacobs
Date	July 13, 2020
Version	FINAL

1. Project Background

A project was identified by JEA's Large-diameter Pipe Evaluation and Rehabilitation Program (Technical Memorandum [TM] W-03 – Martin Luther King: Fairfax to Brentwood Water Main Replacement) for the replacement of a 20-inch water main along Martin Luther King Jr (MLK) Parkway and a 16-inch water main along Myrtle Avenue North. The 20-inch cast iron (CI) water main along MLK Parkway serves as a source of potable water for residential communities north of downtown Jacksonville, Florida. One of two primary transmission mains coming from the Fairfax Water Treatment Plant (WTP), the 20-inch transmission main has had multiple failures, including a major failure at the MLK Parkway and Interstate 95 (I-95) interchange. Non-destructive testing was performed on this water main using acoustic thickness testing. The testing was performed on approximately half of the length, and results indicated that the average thickness loss throughout the section tested was up to 50 percent of the pipe wall.

JEA has requested that the existing 20-inch and 16-inch CI water mains be replaced with the same diameter ductile iron pipe (DIP). The route identified in the evaluation proposes using the same corridor as the existing pipe alignments for most of the water main replacement; however, the proposed pipe alignment will vary slightly at the MLK Parkway and I-95 interchange. The design and installation of the 20-inch water main across the I-95 interchange, from Abbott Street to Venus Street (along MLK Parkway), will be part of a Florida Department of Transportation (FDOT) interchange improvement project.

The proposed 20-inch water main replacement is approximately 7,435 linear feet (LF) and starts at the Fairfax WTP on West 21st Street and ends east of the I-95 interchange at the intersection of Brentwood Boulevard and West 21st Street (this includes approximately 2,000 LF being completed as part of the FDOT interchange project). Additionally, approximately 1,875 LF of 16-inch CI water main within the project area along Myrtle Avenue North will be replaced from West 15th Street to West 22nd Street. Replacing the two identified water mains will increase reliability and avoid unscheduled service interruptions for the distribution system of the Fairfax WTP.

2. Purpose

The purpose of this route study is to identify and evaluate viable route options prior to finalizing route selection and proceeding with survey, geotechnical investigation, conceptual design, permitting, and final design. The Jacobs team used available aerials, topographic, utility, property, and geographic information system (GIS) information, as well as comprehensive field investigations to determine the viability of the Base Route. This TM will focus on the Base Route for replacement of the 20-inch water main and 16-inch water main providing potable water from the Fairfax WTP.

3. Project Description

This route study will evaluate the proposed alignment based on the following criteria: cost; environmental, community, and customer impacts; constructability; available rights-of-way and easements; existing utilities and trees; permitting; and operation and maintenance considerations.

This pipeline route study focuses on identifying a corridor for a 20-inch water main originating at the Fairfax WTP (located on Fairfax Street and West 21st Street), paralleling MLK Parkway along West 21st Street to Brentwood Boulevard and a 16-inch water main on Myrtle Avenue North between West 15th Street and West 22nd Street. The proposed alignment presented in the *Large-Diameter Evaluation and Rehabilitation Program* TM W-03 is along the existing pipeline corridors and will be evaluated in this route study as the Base Route for each water main. At the initial project meeting held April 17, 2020, it was determined that alternate routes along adjacent streets were non-viable due to the number of water service connections along the existing 20-inch and 16-inch water mains. The consideration of another route would require the construction of new distribution mains along West 21st Street and Myrtle Avenue North, as well as, the construction of new 20-inch and 16-inch water mains along the alternate corridors. Figure MLK-OV, presented in Attachment 1, depicts the overall project area.

Key crossings of major FDOT and City of Jacksonville (COJ) roadways include, but are not limited, to MLK Parkway, Myrtle Avenue North, and Moncrief Road, as well as the Norfolk Southern Railroad crossing Myrtle Avenue North south of West 18th Street. The route study discusses the proposed installation method for each key crossing. For the purposes of this route study, the type of trenchless crossing (auger bore or horizontal directional drill [HDD]) was preliminarily identified and the approximate length estimated. Further investigation of the proposed installation method should be completed during the design phase.

Additional efforts were made to reduce the number of permanent utility easements and temporary construction easements that would need to be obtained to complete construction. Consideration was given to existing road conditions, utility conflicts, available rights-of-way, trees, power poles, structures, and other factors identified in the field that could be a hindrance or impact to the pipeline alignment. The project team conducted a comprehensive field inspection of the proposed routes to identify details that are not apparent from available records. Using a proprietary application on mobile devices, Jacobs recorded aboveground assets that can help navigate potential routes and alignments.

4. 20-Inch Water Main – MLK Parkway Base Route

This portion of the route study focused on identifying a corridor for the 20-inch water main replacement from the Fairfax WTP at West 21st Street to West 21st Street and Brentwood Boulevard. The existing 20-inch water main is to remain in service during the construction of the new 20-inch water main. When the proposed 20-inch water main and its associated connections have been placed into service, the existing 20-inch water main will be abandoned in place with grout fill. The Base Route is shown in detail in Attachment 2, on Figures MLK-20in WM-1 through MLK-20in WM-12.

4.1 Route Description

The Base Route connects to the existing 20-inch water main at the Fairfax WTP fence line on the south side of West 21st Street, west of Fairfax Street. The north side of the Fairfax WTP property on West 21st Street is shown in Photo 1. The tie-in location and logistics at the plant will be evaluated and determined during the design phase. The existing 20-inch cast iron water main is generally on the south side of West 21st Street, from Fairfax Street to Abbott Street. Additionally, JEA GIS and field investigations have identified an 8-inch gravity sewer line that is largely in the center of West 21st Street. Due to the location of these existing wet utilities and the overhead electric within the southern right-of-way of West 21st Street, the recommended pipe alignment for the new 20-inch DIP water main is in the north lane of West 21st Street, between Fairfax Street and Abbott Street. An exception to being in the north lane occurs at Moncrief Road, where the pipe alignment navigates to the south lane briefly to avoid existing stormwater mains, gravity sewer mains, and manholes. West 21st Street is largely residential with homes and large trees on either side of the right-of-way (Photo 2). Between Barnett Street and Myrtle Avenue North, the pipe alignment crosses the Royal Tabernacle Missionary Baptist Church parking lot entrance. Accommodations for church activities should be included in the construction plans and schedule.



Photo 1. Facing South: West 21st Street, Fairfax WTP – North fence line and general tie-in location for the new 20-inch DIP water main



Photo 2. Facing East: West 21st Street – typical corridor

At Abbott Street, the proposed 20-inch water main turns south, occupying the northbound lane of Abbott Street to MLK Parkway. At this turn south, the new water main is expected to cross the existing 20-inch water main, gravity sewer, and stormwater conveyance. Existing utilities within the Abbott Street right-of-way include a 20-inch water main, gravity sewer, and overhead electric.



Photo 3. Facing South: Abbott Street – typical corridor.

Abbott Street ends at West 20th Street, just north of MLK Parkway. At this point, the portion of the 20-inch water main replacement within the FDOT right-of-way will be designed and installed as part of the FDOT I-95 at MLK Blvd Interchange Project—currently in the design phase. This portion of the water main will extend from MLK Parkway at Abbott Street to W 21st Street west of Venus Street. A figure provided by JEA, depicts the preliminary route for the FDOT portion of the water main alignment and is included as Attachment 4. The connection points to the FDOT portion of the water main replacement will require valves. Placement of valves will be determined during the design phase.

From the connection with the east side of the FDOT portion of the 20-inch water main alignment, the remainder of this route will continue in the westbound lane of W 21st Street. At the intersection of W 21st Street and Mars Avenue/Brentwood Boulevard, the 20-inch replacement water main will connect with the existing water main. This intersection includes God's Ark of Safety Ministries; as such, accommodations for church activities should be included in the construction plans and schedule. Additional consideration should be given to a new distribution water main on Mars Avenue to replace the existing 2-inch galvanized water main.



Photo 4. Facing North: Connection point for 20-inch water main replacement at West 21st Street and Mars Avenue/Brentwood Boulevard.

4.2 Open-cut Crossings

Open-cut crossings are anticipated for Fairfax Street, Myrtle Avenue North, and Moncrief Road, which are 2 to 3 lanes wide. A temporary traffic control plan will need to be developed for each road crossing, which may require detours and/or a phased approach to maintain traffic. The crossing at Fairfax Street requires navigating an existing 16-inch raw water main and 20-inch water main, fiber optic lines, and buried electric. The crossing at Myrtle Avenue North also requires navigating several existing utilities, including a 16-inch water main, a gravity sewer main, stormwater, and a gas main. Installing the new 20-inch water main by open cut across Myrtle Avenue North is necessary due to the lack of space for a trenchless crossing, the close proximity of buildings to the right-of-way, the existing water services along the route, and the connection to the 16-inch water main along Myrtle Avenue North.

While the crossings at Fairfax Street and Myrtle Avenue North propose the replacement water main in the westbound lane, the crossing at Moncrief Road proposes the water main alignment to move to the eastbound lane due to existing stormwater and gravity sewer. There are three manholes (stormwater and wastewater) located at the northwest corner of the West 21st Street and Moncrief Road intersection. The close proximity of buildings and overhead electric to the West 21st Street right-of-way, the existing water services along the route, and the connection to the existing water main along Moncrief Road requires installing this crossing by open cut instead of considering a trenchless installation method.

There are several minor intersections within residential areas along the route that are proposed to be crossed by open cut. These minor road crossings will require a temporary traffic control plan to be developed. The minor road crossings identified are summarized below:

- Wilson Street

- Witschen Street
- Barnett Street
- West 21st Street (at Abbott Street)
- West 20st Street
- Venus Street



Photo 5. Facing East: Intersection of West 21st Street at Moncrief Road.

4.3 Horizontal Directional Drill Crossing

An HDD is proposed at the MLK Parkway crossing along West 21st Street. The proposed drill location crosses under FDOT right-of-way and is shown in Attachment 2, Figures MLK-20in WM-1 through MLK-20in WM-3. The anticipated drill rig location is on the east side of the MLK Parkway crossing within the West 21st Street right-of-way and the pipe laydown on the west side, along West 21st Street. Due to the length of the drill and proximity of Fairfax Street, consideration should be given to assembling two intermediate pipe strings, which would then be fused together into a single pipe string just prior to pullback. Based on previous experience of HDD installations of this general size, street closures and detours around the closing of the Fairfax Street and West 21st Street intersection are anticipated to be 3 days or less. For the purposes of this study, the existing 20-inch water main crossing MLK Parkway in the FDOT right-of-way will be placed out of service and grout filled. The MLK Parkway crossing will require an FDOT utility permit. Impacts to the neighborhood, including noise control and traffic control, will need to be mitigated during construction.



Photo 6. Facing East: Proposed West side of HDD crossing of MLK Parkway at West 21st Street and Pearce Street.

4.4 20-Inch Water Main Summary

- Total Pipe Length: 5,435 LF, 20-inch DIP water main
- No additional easements appear to be required for proposed pipe alignment—the alignment uses existing road right-of-way and JEA property.
- The proposed alignment is within residential areas and commercial/mixed-use intersections.
- Six open-cut crossings of two-lane roads, many in residential areas, as well as open-cut crossings of the following major roads: Fairfax Street, Myrtle Avenue North, and Moncrief Road. All open-cut crossings require specific maintenance of traffic (MOT) to maintain access and/or provide detours during construction.
- One HDD is anticipated to cross MLK Parkway, approximately 735 LF.
- There are several large trees along either side of West 21st Street, between Grunthal Street and Abbott Street; however, tree clearing is not anticipated as the pipeline alignment is expected to be within the road pavement.
- The route alignment includes work within FDOT right-of-way in three locations: (1) MLK Parkway crossing, just east of the Fairfax WTP; (2) Moncrief Road crossing at West 21st Street; and (3) at the interchange of MLK Parkway and I-95 (this part of the alignment will be installed and designed by others, with connections being made at the FDOT right-of-way).
- Approximately 127 water service connections are anticipated along the new 20-inch water main.
- Approximately 14 side street distribution water main connections are anticipated along the new 20-inch water main.

5. 16-inch Water Main – Myrtle Avenue North

The Base Route for the 16-inch water main replaces an existing 16-inch CI water main along Myrtle Avenue North, between West 22nd Street and West 15th Street. Similar to the 20-inch portion, the

existing 16-inch water main is to remain in service during the construction of the new 16-inch water main. When the 16-inch water main and its associated connections have been placed into service, the existing 16-inch water main will be abandoned in place with grout fill. For purposes of the existing 16-inch water main crossing MLK Parkway in the FDOT right-of-way, the existing 16-inch water main will be placed out of service and grout filled. The Base Route is shown in detail in Attachment 3, on Figures MLK-16in WM-1 through MLK-16in WM-3.

5.1 Route Description

The Base Route for the new 16-inch DIP water main connects to the existing 16-inch water main stubout located just north West 15th Street, on the west side of Myrtle Avenue North (Photo 7). South of this stubout, the existing water main was previously replaced with a 16-inch polyvinyl chloride (PVC) water main. From this connection northward, the proposed 16-inch water main alignment is within the northbound lane, except where the pipe alignment crosses MLK Parkway, which is proposed to be west of the Myrtle Avenue North intersection. The existing utilities are generally located in the western right-of-way of Myrtle Avenue North and include the existing 16-inch CI water main, gravity sewer, stormwater, underground fiber optic, and underground electric. Myrtle Avenue North consists of a northbound lane, a southbound lane, and a middle turning lane for a majority of the proposed corridor. The replacement water main connects to the distribution system at the intersection of Myrtle Avenue North and West 22nd Street, where the existing 16-inch water main tees to a 6-inch water main and reduces to an 8-inch water main in the northwest corner of the intersection (Photo 8).

The Mount Ararat Baptist Church is located along the east side of Myrtle Avenue North between West 16th Street and West 15th Street. As with other churches in the project area, construction in this area should be coordinated around services on Sundays, Wednesday evenings, and other church events. The Staunton College Preparatory School is located along the east side of Myrtle Avenue North south of West 15th Street. Construction along Myrtle Avenue North should be avoided while school is in session and for school-related events. Coordination and public outreach with the school and community is recommended prior to and during construction.



Photo 7. Facing North: South connection at existing 16-inch water main stubout at northwest corner of Myrtle Avenue North and West 15th Street.



Photo 8. Facing South: North connection at existing tee at Myrtle Avenue North and West 22nd Street.

5.2 Open-Cut Crossings

There are several minor intersections in residential areas within this route that are proposed to be crossed by open cut. These minor road crossings will require a temporary traffic control plan to be developed. The minor road crossings identified are summarized below:

- West 21st Street
- West 20th Street
- West 19th Street
- West 18th Street
- West 16th Street

5.3 Auger Bore Crossings

Auger bore crossings are anticipated for MLK Parkway (Attachment 3, Figure MLK-16in WM-2) and Norfolk Southern Railroad between West 16th Street and West 18th Street (Attachment 3, Figures MLK-16in WM-2 and MLK-16in WM-3). At the MLK Parkway crossing, the proposed jacking and receiving pits are west of Myrtle Avenue North (Photo 9) to avoid the existing utilities within Myrtle Avenue North and also to minimize impacts to traffic. The east side of Myrtle Avenue North includes structures that are in close proximity to the right-of-way line and does not permit sufficient space for an auger bore crossing. The crossing of MLK Parkway requires crossing several utilities, including gas, gravity sewer, stormwater, and communication/fiber optic lines. An FDOT utility permit will be required for the MLK Parkway

crossing. An easement will be required on the north side of the MLK Parkway crossing for the proposed alignment.

The auger bore for the railroad crossing is anticipated to be in the northbound lane of Myrtle Avenue North and also requires crossing two underground stormwater pipes. No easements are anticipated to be required for this auger bore crossing. A road closure is anticipated to provide sufficient workspace for the crossing, and a temporary traffic control plan with detours will need to be developed. The railroad crossing along Myrtle Avenue North will require a Utility Occupancy License from Norfolk Southern. See Attachment 5 for the U.S. Department of Transportation/Federal Railroad Administration Crossing Inventory Form that includes detailed information about this railroad crossing.

5.4 16-Inch Water Main Summary

- Total Pipe Length: 1,875 LF, 16-inch DIP Water Main
- An easement is anticipated at the northwest corner of the MLK Parkway/Myrtle Avenue North intersection to accommodate the auger bore crossing.
- The proposed alignment is within commercial/mixed-use areas.
- Five open-cut crossings of two-lane roads and two open-cut crossings of Myrtle Avenue North. All open-cut crossings require specific MOT to maintain access and/or provide detours during construction.
- Two auger bore crossings anticipated: (1) Across MLK Parkway, 155 LF and (2) crossing Norfolk Southern Railroad between West 18th Street and West 16th Street (Photo 10), 120 LF
- No HDD installations are proposed for the 16-inch water main portion of this project.
- No large tree impacts are anticipated.
- The route alignment includes work within FDOT right-of-way where Myrtle Avenue North crosses MLK Parkway (proposed crossing by auger bore).
- Approximately 19 water service connections are required on the 16-inch water main.
- Approximately 12 side street distribution water main connections are anticipated along the new 16-inch water main.



Photo 9. Facing South: Proposed jacking pit location for MLK Parkway auger bore crossing.



Photo 10. Facing South: Norfolk Southern Railroad auger bore crossing proposed in northbound lane of Myrtle Avenue N.

6. Alternate/Non-Viable Routes

The Jacobs and JEA project team held a kickoff meeting April 17, 2020. During the kickoff meeting, the project team discussed:

- Existing water mains being evaluated along West 21st Street and Myrtle Avenue North
- Existing service connections to the residents and businesses served from these existing water mains
- Challenges of using alternate corridors

Based on these discussions, it was determined no alternate routes for either the 20-inch water main parallel to MLK Parkway or the 16-inch water main on Myrtle Avenue North would be considered during this investigation. The replacement of the 20-inch water main along MLK Parkway requires, at a minimum, a distribution water main be placed in the existing West 21st Street corridor to serve customers connected to the existing 20-inch water main. Similarly, replacement of the existing 16-inch water main along Myrtle Avenue North requires, at a minimum, a distribution water main to be placed in the existing Myrtle Avenue North corridor to serve customers connected to the existing 16-inch water main. Limiting construction to a single street, rather than multiple parallel streets, will reduce impact to the community and reduce overall construction cost to JEA.

8. Evaluation Criteria

This section provides a summary of evaluation criteria used in this route study. The evaluation criteria used to confirm the final route for the MLK Parkway Water Main Replacement should be reflective of JEA's Corporate Measures, which are guided by and evaluated against four measures:

- Customer Value – What a customer expects to get in exchange for the price

- Financial Value – The monetary value and risk profile, both today and tomorrow, of JEA as it relates to COJ
- Community Impact Value – Improving the quality of life through innovative and cost-effective service offerings, employee volunteerism and ambassadorship, relevant and timely communications, and support of economic development and job growth throughout JEA's service territory; fostering a collaborative and respectful corporate culture that provides exceptional employee value to equip the JEA team to deliver outstanding service and value to our community
- Environmental Value – Ensuring a sustainable environment for future generations

8.1 Existing Utilities and Service Connections

Due to the project occurring in an urban area and near an operating WTP, there are a number of existing utilities within the project corridor. On West 21st Street, the existing utilities, including the existing 20-inch water main, are generally in the south lane and right-of-way. Along Myrtle Avenue North, generally, existing utilities are located on the west side of the corridor. Potential utility relocation using vertical adjustments may be required where the new water mains cross existing utilities, such as small water lines. Stormwater and gravity sewer crossings are anticipated to require additional depth and fittings for the 20-inch and 16-inch water mains to cross underneath.

During the kickoff meeting held between Jacobs and JEA (April 17, 2020), JEA noted that there were ongoing efforts to replace cast iron and galvanized distribution water mains throughout the service area. Where side street connections to cast iron or galvanized water mains are found, a stubout for a future connection will be designed for the respective 20-inch or 16-inch water main.

There are a large number of existing services along the 20-inch cast iron water main. During the kickoff meeting, JEA indicated a 4-inch connection is required for water services connected to 20-inch and larger water mains. The cost estimate is based on a 20-inch by 4-inch tapping sleeve and valve, 4-inch cap tapped for 2-inches, and transitioning to the typical polyethylene tubing to connect existing services. Initial vendor information indicates 20-inch by 4-inch tees are not available.

8.2 Maintenance of Traffic

Impacts to traffic patterns are anticipated along a majority of the proposed routes. A detailed temporary traffic control plan will be required to maintain traffic and access to both residents and businesses during construction. The traffic control plan should include signs indicating entrances to businesses and churches along the affected route. Construction timing in the vicinity of churches should be sequenced to occur during the least impact timeframes, such as avoiding Sundays, Wednesday evenings, and any large events. Construction timing along Myrtle Avenue North in the vicinity of the Stanton College Preparatory School should be sequenced to occur during summer, if possible, to minimize impacts.

8.3 Trenchless Crossings

Proposed trenchless crossings of larger and/or heavily trafficked roads and railroads are recommended to reduce impacts to the public and traffic during construction and comply with FDOT and railroad requirements. The actual trenchless method should be confirmed in the design phase through geotechnical investigation and evaluation of subsurface conditions, corrosion properties, existing utility locations, easement and property acquisition needs, and other factors. Applicable geotechnical instrumentation, such as settlement monitoring points and piezometer locations and details should be developed during the design phase. The proposed auger bore crossings for the 16-inch water main are anticipated to have 30-inch-diameter steel casings. The minimum depth of the casing will comply with FDOT and railroad requirements.

An HDD crossing is being considered under MLK Parkway along West 21st Street for the 20-inch water main route as described herein. The intent of the HDD is to minimize impact to the public and traffic

during construction and comply with FDOT requirements. The HDD installation will be completed using 24-inch high-density polyethylene DR11 DIPS pipe.

8.4 Tree Impacts

Most of the pipeline alignment is within pavement, and minimal tree impacts and clearing are expected for either the 20-inch or 16-inch water main replacements. Depending on the design alignment, there may be potential tree impacts in the residential areas along the West 21st Street 20-inch water main relocation alignment. Tree species, tree mitigation requirements, and removal extents should be determined in the design phase. Ideally, the designed alignments will minimize impacts to large or heritage trees.

8.5 Neighborhood/Residential Impacts

The project area being considered is majority residential and commercial/mixed-use area. There will be an impact to residents and businesses for both water main replacements. Additionally, water service connections will need to be switched from the existing water mains to the new water mains. Public outreach activities ahead of the construction phase for residents and businesses that will be affected by construction may help mitigate the overall impact.

8.6 Permitting/Permission Requirements

The following permits/applications are anticipated for this project:

- FDOT utility permits for the MLK Parkway crossings at West 21st Street and at Myrtle Avenue North and the Moncrief Road crossing at West 21st Street (three separate permits)
- COJ major utility review
- A water main construction permit is not required based on FAC 62-555.520(c).2: Replacement of any existing water main with a new main at the same location as the existing main, provided the new main will be either the same size as the existing main, no more than two sizes larger than the existing main, or no larger than the minimum size required or recommended in Recommended Standards for Water Works as incorporated into Rule 62-555.330, F.A.C. However, a self-certification will need to be submitted to the Florida Department of Environmental Protection (FDEP) before the work begins. FDEP has an online portal for this purpose.
- The railroad crossing along Myrtle Avenue North will require a Utility Occupancy License from Norfolk Southern. In addition to the application fee, additional fees for the utility license, insurance, flagging services, and inspection will be determined during the application review process.

8.7 Real Estate Impacts/Easements

Only permanent easements were considered for this evaluation. Temporary construction easements were not quantified but may be needed at trenchless crossings. Extents of temporary construction easements will be determined during the design phase. A permanent easement is anticipated at the northwest corner of the MLK Parkway/Myrtle Avenue North intersection for the trenchless crossing.

8.8 Hazard/Contamination Areas

There are no active or historical cleanup sites within 500 feet of the proposed 20-inch water main relocation route based on a review of the FDEP Contamination Locator Map. There are two areas within 500 feet of the 16-inch water main relocation alignment that are designated as cleanup sites. According to FDEP's Contamination Locator Map, one of the locations affected is at the intersection of Myrtle Avenue North and West 16th Street, near an operational gas station. During the field investigation,

monitoring wells were observed within this designated petroleum cleanup site. The second location is at 1250 West 16th Street, approximately 400 feet east of the Myrtle Avenue North right-of-way, is designated as a brownfield cleanup site. Because this cleanup site is not directly on the route, the field team did not observe if there were visible monitoring wells at this location. During the design phase, groundwater sampling and additional investigation should be performed to determine if special handling of the collected groundwater from dewatering operations will be required in the vicinity of the cleanup sites.

9. Conclusion and Recommendations

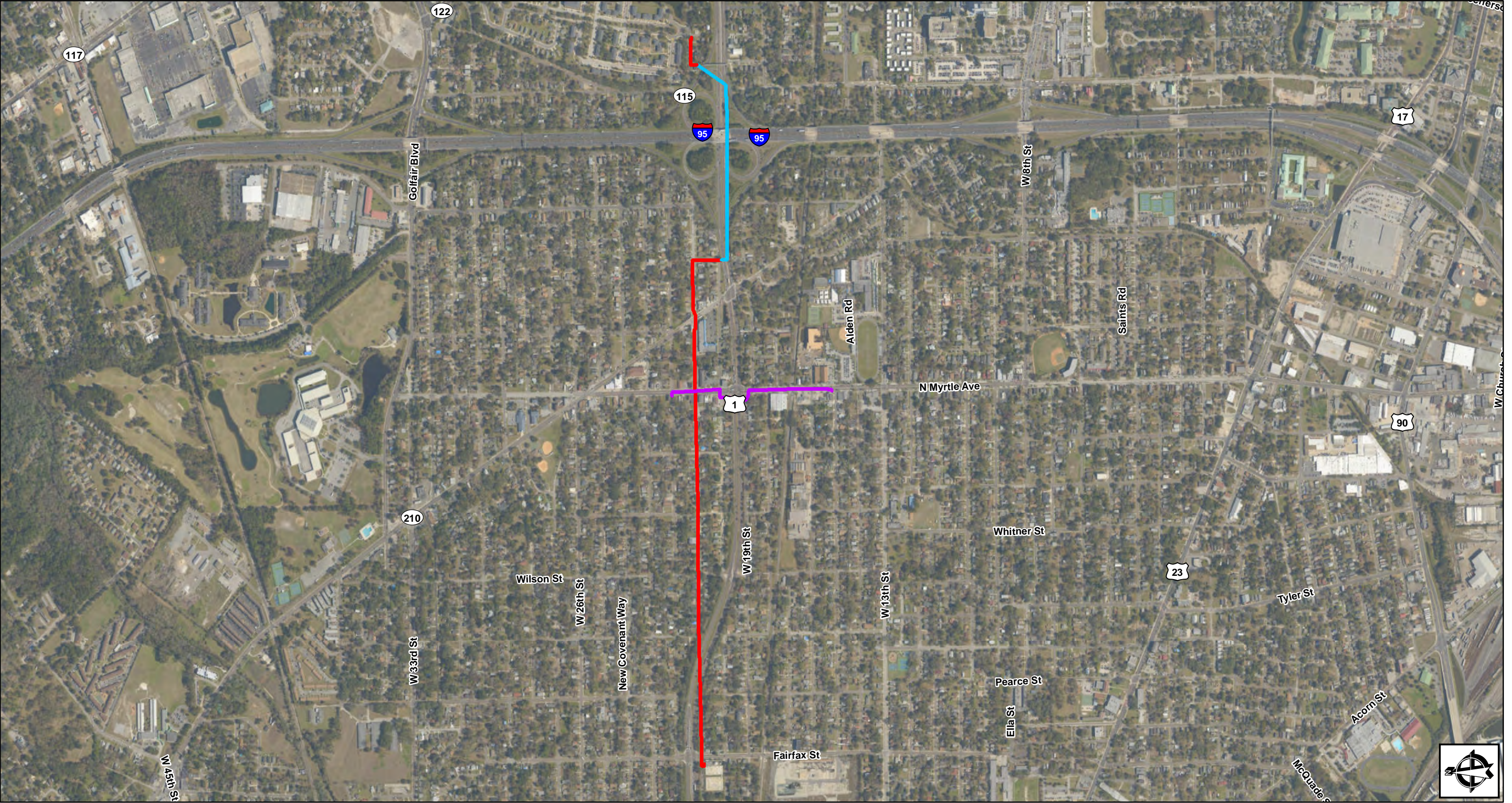
Following the review of the Draft Route Study (delivered to JEA on June 5, 2020), a Route Study Review Meeting was conducted virtually on Monday, June 29, 2020. After discussion of the comments related to the Draft, all parties concluded that the Selected Route would follow the proposed route as outlined in this technical memorandum.

Table 9-1 presents a high-level summary of the Selected Routes. While cost is a key factor in route selection, additional considerations were included for the final Selected Route. The High, Medium, and Low parameters below are subjective and are being used to compare recent JEA large-diameter pipeline projects and route studies with this MLK Route Study.

Table 9-1: Summary of Base Routes

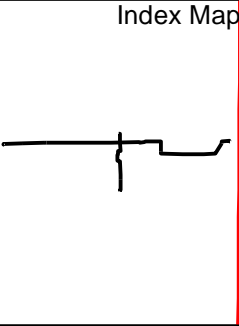
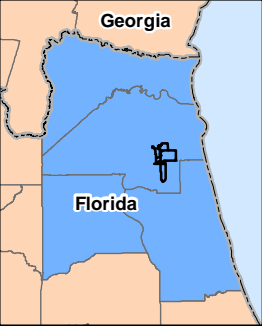
Critical Component	20-inch Water Main Route	16-inch Water Main Route
Total Pipe Length	5,435 LF	1,875 LF
Trenchless Crossings	HDD 735 LF (MLK Parkway crossing)	Auger Bore 155 LF (MLK Parkway crossing) Auger Bore 120 LF (RR crossing)
Community Impact	Residential MOT (High) Commercial MOT (Medium) School/Church (Medium)	Residential MOT (Medium) Commercial MOT (High) School/Church (Medium)
Community Value	New Paved Road (High) Replace Old Pipe (High)	New Paved Road (Medium) Replace Old Pipe (High)
Environmental Impact	Minimal Tree Impact No Contamination No Gopher Tortoise	Minimal Tree Impact Contamination (Medium) No Gopher Tortoise
Permitting/Permission (FDOT, COJ, RR)	FDOT – MLK Parkway and Moncrief Road at West 21st Street crossings COJ – Major Utility Review RR – None	FDOT – MLK Parkway at Myrtle Avenue North crossing COJ – Major Utility Review RR – Utility Occupancy License
Easements/Real Estate	None Anticipated	One (NW corner at MLK Pkwy/Myrtle Ave N)

Attachment 1
Overall Project Map



Legend

- MLK 20" Base Route
- MLK 16" Base Route
- FDOT Interchange Project



MLK Route Overview

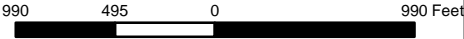
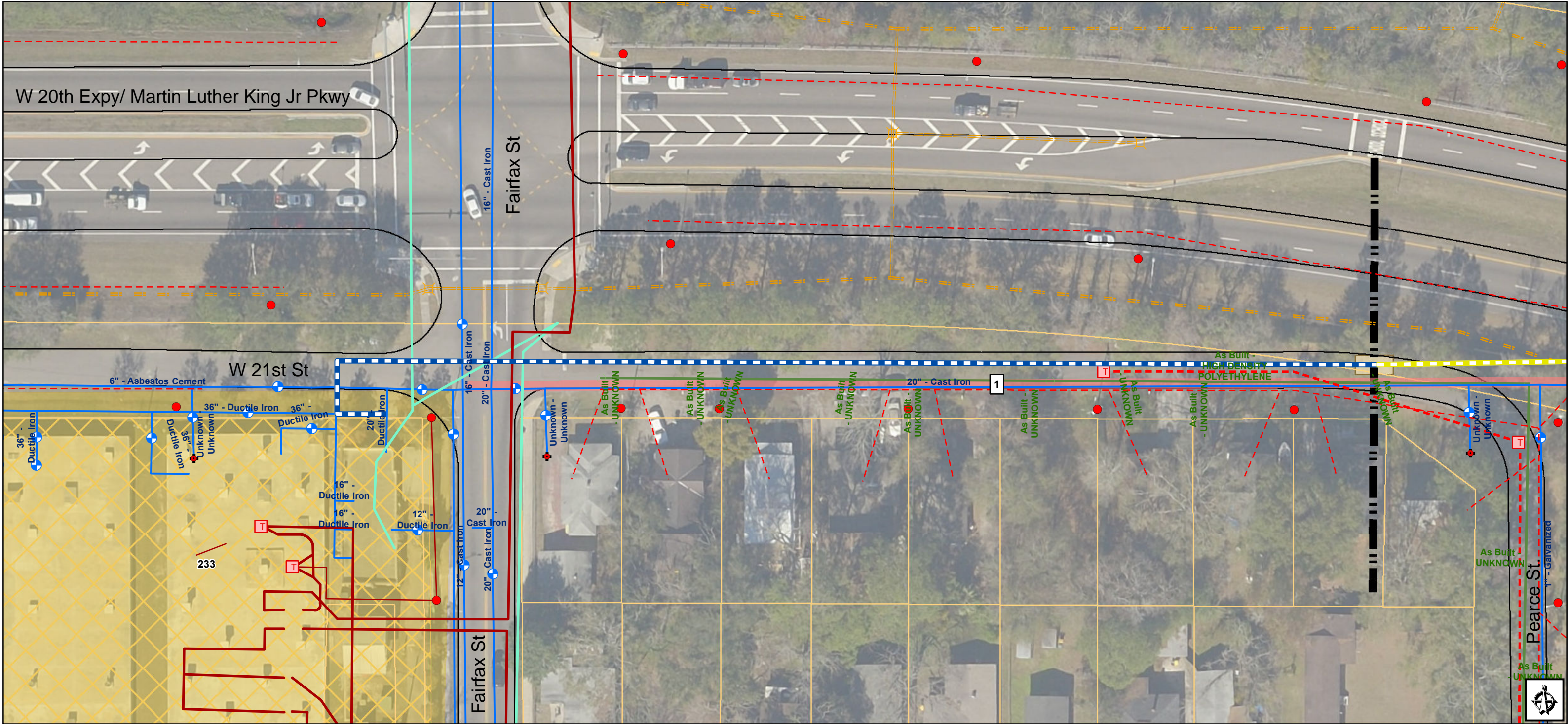


Figure MLK-OV



Attachment 2
20-inch WM Base Route – Figures



Label	Project Name	Type	Design Year	Construction Year	Agency
1	JP - FDOT - I95 and MLK Jr Interchange - WM Replacement	Water	2020	2022	JEA
2	Myrtle Av - 8th St W to MLK Jr Pkwy	Resurfacing	2016	2017	COJ

- Proposed Work**
- Proposed 20" Open Cut
 - Proposed 20" Auger Bore
 - Proposed 24" HDD
 - Proposed 20" Dry Line
 - Proposed 16" Route

Legend

Water Hydrant

Water Meter

Water Valve

Water Pipe

Raw Water Pipe

Control Structure

Storm Inlet

Storm Manhole

Storm Outfall

Stormwater Pump

Clay Storm Water Structure

Open Conveyance

Closed Conveyance

Exfiltration Trench

Clay Storm Pipe

Cross Culvert Pipe

Fiber Structure

Fiber Optic Cable Overhead

Fiber Optic Cable Underground

Reclaimed Valve

Reclaimed Meter

Reclaimed Hydrant

Reclaimed Fitting

Reclaimed Pipe

Sewer Valve

Sewer Meter

Sewer Station

Sewer Manhole

Force Main

Gravity Main

Abandoned / Decommissioned

Electric Pole

Primary OH Line

Secondary OH Line

Primary UG Line

Secondary UG Line

Electric OH Transmission Span

Powerline

Transmission Structure

Gas valve

Gas Main

Comm Marker

Comm

Unknown Utility

Edge of Pavement

COJ Resurfacing Project

JEA Grid Project

Parcel Line

FDOT Owned Property

COJ Owned Property

JEA Owned Property

NWI Wetlands

Easement

JEA Parcel Data (LDP)

MLK Route Study

50

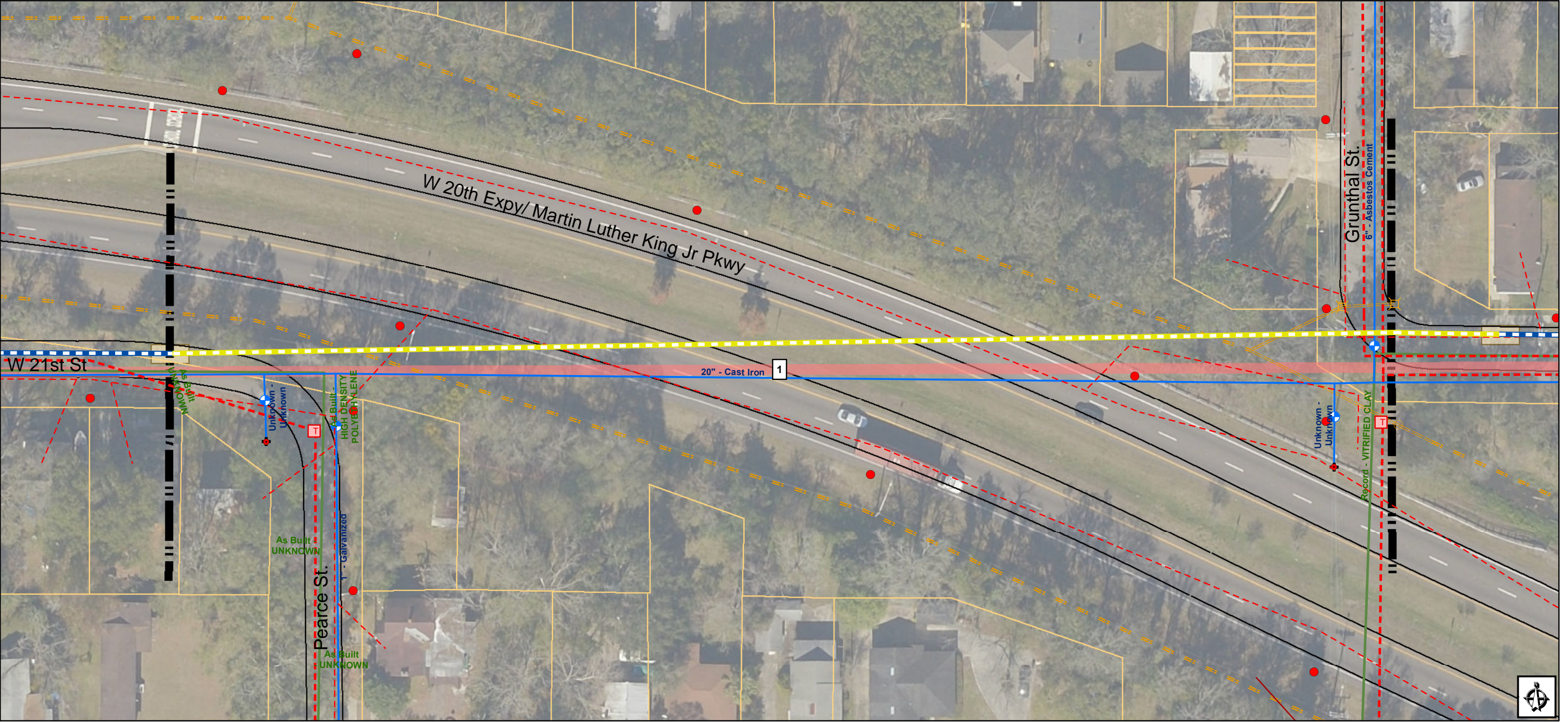
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Feet

Figure-MLK-20in WM-1



Label	Project Name	Type	Design Year	Construction Year	Agency
1	JP - FDOT - I95 and MLK Jr Interchange - WM Replacement	Water	2020	2022	JEA
2	Myrtle Av - 8th St W to MLK Jr Pkwy	Resurfacing	2016	2017	COJ

- Proposed Work**
- Proposed 20" Open Cut
 - Proposed 20" Auger Bore
 - Proposed 24" HDD
 - Proposed 20" Dry Line
 - Proposed 16" Route

Legend

Water Hydrant

Water Meter

Water Valve

Water Pipe

Raw Water Pipe

Control Structure

Storm Inlet

Storm Manhole

Storm Outfall

Stormwater Pump

Clay Storm Water Structure

Open Conveyance

Closed Conveyance

Exfiltration Trench

Clay Storm Pipe

Cross Culvert Pipe

Fiber Structure

Fiber Optic Cable Overhead

Fiber Optic Cable Underground

Reclaimed Valve

Reclaimed Meter

Reclaimed Hydrant

Reclaimed Fitting

Reclaimed Pipe

Sewer Valve

Sewer Meter

Sewer Station

Sewer Manhole

Force Main

Gravity Main

Abandoned / Decommissioned

Electric Pole

Primary OH Line

Secondary OH Line

Primary UG Line

Secondary UG Line

Electric OH Transmission Span

Powerline

Transmission Structure

Gas valve

Gas Main

Comm Marker

Comm

Unknown Utility

Edge of Pavement

COJ Resurfacing Project

JEA Grid Project

Parcel Line

FDOT Owned Property

COJ Owned Property

JEA Owned Property

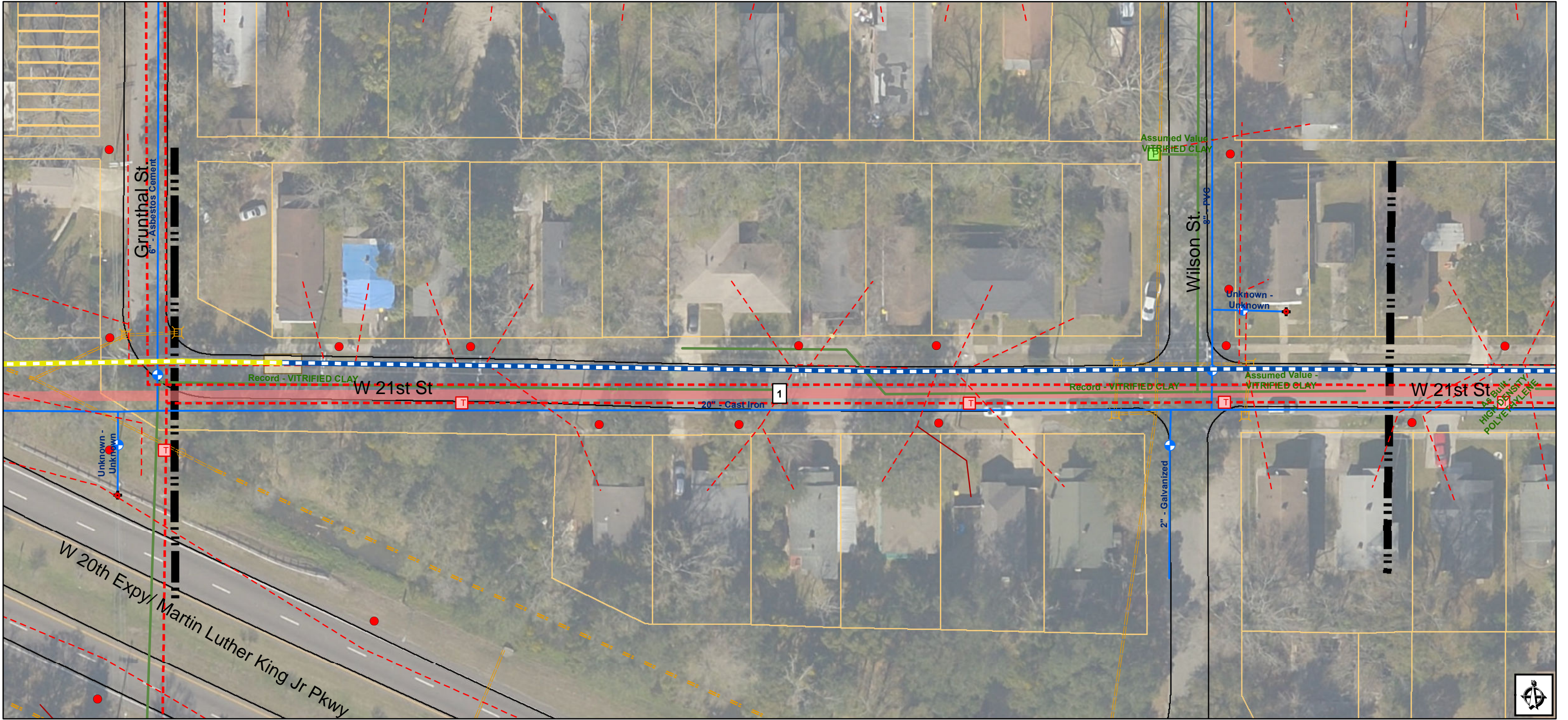
NWI Wetlands

Easement

JEA Parcel Data (LDP)

MLK Route Study

Figure-MLK-20in WM-2



Label	Project Name	Type	Design Year	Construction Year	Agency
1	JP - FDOT - I95 and MLK Jr Interchange - WM Replacement	Water	2020	2022	JEA
2	Myrtle Av - 8th St W to MLK Jr Pkwy	Resurfacing	2016	2017	COJ

- Proposed Work**
- Proposed 20" Open Cut
 - Proposed 20" Auger Bore
 - Proposed 24" HDD
 - Proposed 20" Dry Line
 - Proposed 16" Route

Legend

Water Hydrant

Water Meter

Water Valve

Water Pipe

Raw Water Pipe

Control Structure

Storm Inlet

Storm Manhole

Storm Outfall

Stormwater Pump

Clay Storm Water Structure

Open Conveyance

Closed Conveyance

Exfiltration Trench

Clay Storm Pipe

Cross Culvert Pipe

Fiber Structure

Fiber Optic Cable Overhead

Fiber Optic Cable Underground

Reclaimed Valve

Reclaimed Meter

Reclaimed Hydrant

Reclaimed Fitting

Reclaimed Pipe

Sewer Valve

Sewer Meter

Sewer Station

Sewer Manhole

Force Main

Gravity Main

Abandoned / Decommissioned

Electric Pole

Primary OH Line

Secondary OH Line

Primary UG Line

Secondary UG Line

Electric OH Transmission Span

Powerline

Transmission Structure

Gas valve

Gas Main

Comm Marker

Comm

Unknown Utility

Edge of Pavement

COJ Resurfacing Project

JEA Grid Project

Parcel Line

FDOT Owned Property

COJ Owned Property

JEA Owned Property

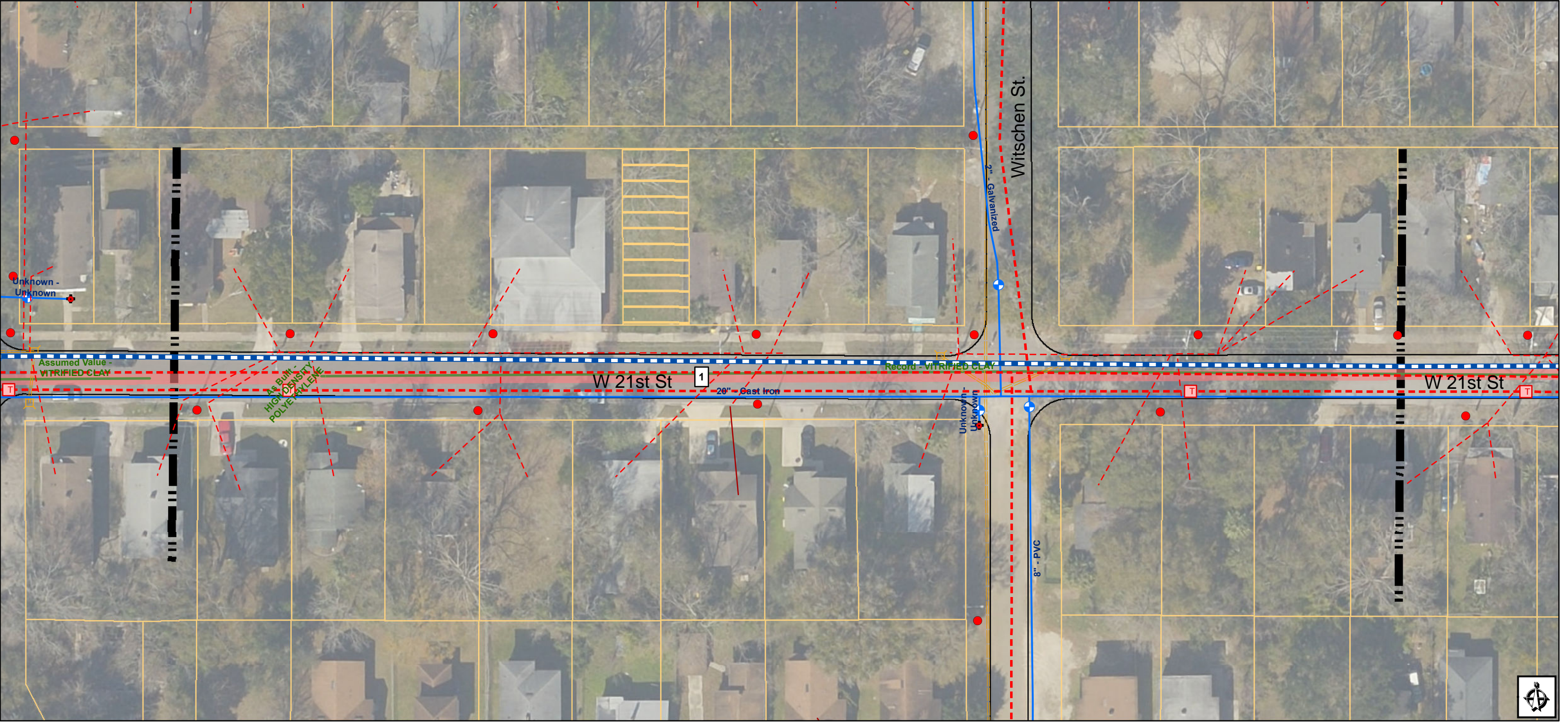
NWI Wetlands

Easement

JEA Parcel Data (LDP)

MLK Route Study

Figure-MLK-20in WM-3



Label	Project Name	Type	Design Year	Construction Year	Agency
1	JP - FDOT - I95 and MLK Jr Interchange - WM Replacement	Water	2020	2022	JEA
2	Myrtle Av - 8th St W to MLK Jr Pkwy	Resurfacing	2016	2017	COJ

- Proposed Work**
- Proposed 20" Open Cut
 - Proposed 20" Auger Bore
 - Proposed 24" HDD
 - Proposed 20" Dry Line
 - Proposed 16" Route

Legend

Water Hydrant

Water Meter

Water Valve

Water Pipe

Raw Water Pipe

Control Structure

Storm Inlet

Storm Manhole

Storm Outfall

Stormwater Pump

Clay Storm Water Structure

Open Conveyance

Closed Conveyance

Exfiltration Trench

Clay Storm Pipe

Cross Culvert Pipe

Fiber Structure

Fiber Optic Cable Overhead

Fiber Optic Cable Underground

Reclaimed Valve

Reclaimed Meter

Reclaimed Hydrant

Reclaimed Fitting

Reclaimed Pipe

Sewer Valve

Sewer Meter

Sewer Station

Sewer Manhole

Force Main

Gravity Main

Abandoned / Decommissioned

Electric Pole

Primary OH Line

Secondary OH Line

Primary UG Line

Secondary UG Line

Electric OH Transmission Span

Powerline

Transmission Structure

Gas valve

Gas Main

Comm Marker

Comm

Unknown Utility

Edge of Pavement

COJ Resurfacing Project

JEA Grid Project

Parcel Line

FDOT Owned Property

COJ Owned Property

JEA Owned Property

NWI Wetlands

Easement

JEA Parcel Data (LDP)

MLK Route Study

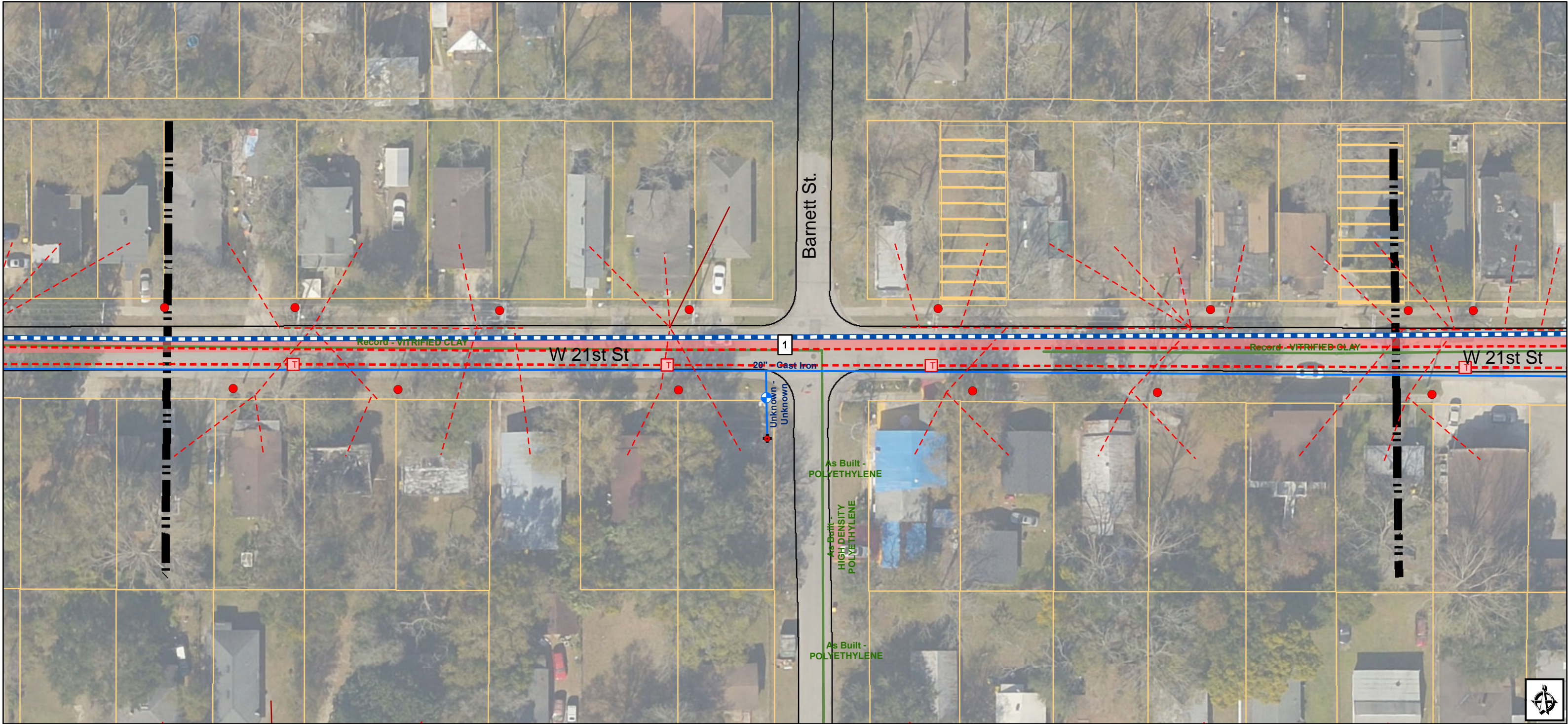
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Feet

JACOBS

JEA sm
Building Community sm

Figure-MLK-20in WM-4



Label	Project Name	Type	Design Year	Construction Year	Agency
1	JP - FDOT - I95 and MLK Jr Interchange - WM Replacement	Water	2020	2022	JEA
2	Myrtle Av - 8th St W to MLK Jr Pkwy	Resurfacing	2016	2017	COJ

- Proposed Work**
- Proposed 20" Open Cut
 - Proposed 20" Auger Bore
 - Proposed 24" HDD
 - Proposed 20" Dry Line
 - Proposed 16" Route

Legend

Water Hydrant

Water Meter

Water Valve

Water Pipe

Raw Water Pipe

Control Structure

Storm Inlet

Storm Manhole

Storm Outfall

Stormwater Pump

Clay Storm Water Structure

Open Conveyance

Closed Conveyance

Exfiltration Trench

Clay Storm Pipe

Cross Culvert Pipe

Fiber Structure

Fiber Optic Cable Overhead

Fiber Optic Cable Underground

Reclaimed Valve

Reclaimed Meter

Reclaimed Hydrant

Reclaimed Fitting

Reclaimed Pipe

Sewer Valve

Sewer Meter

Sewer Station

Sewer Manhole

Force Main

Gravity Main

Abandoned / Decommissioned

Electric Pole

Primary OH Line

Secondary OH Line

Primary UG Line

Secondary UG Line

Electric OH Transmission Span

Powerline

Transmission Structure

Gas valve

Gas Main

Comm Marker

Comm

Unknown Utility

Edge of Pavement

COJ Resurfacing Project

JEA Grid Project

Parcel Line

FDOT Owned Property

COJ Owned Property

JEA Owned Property

NWI Wetlands

Easement

JEA Parcel Data (LDP)

Index Map

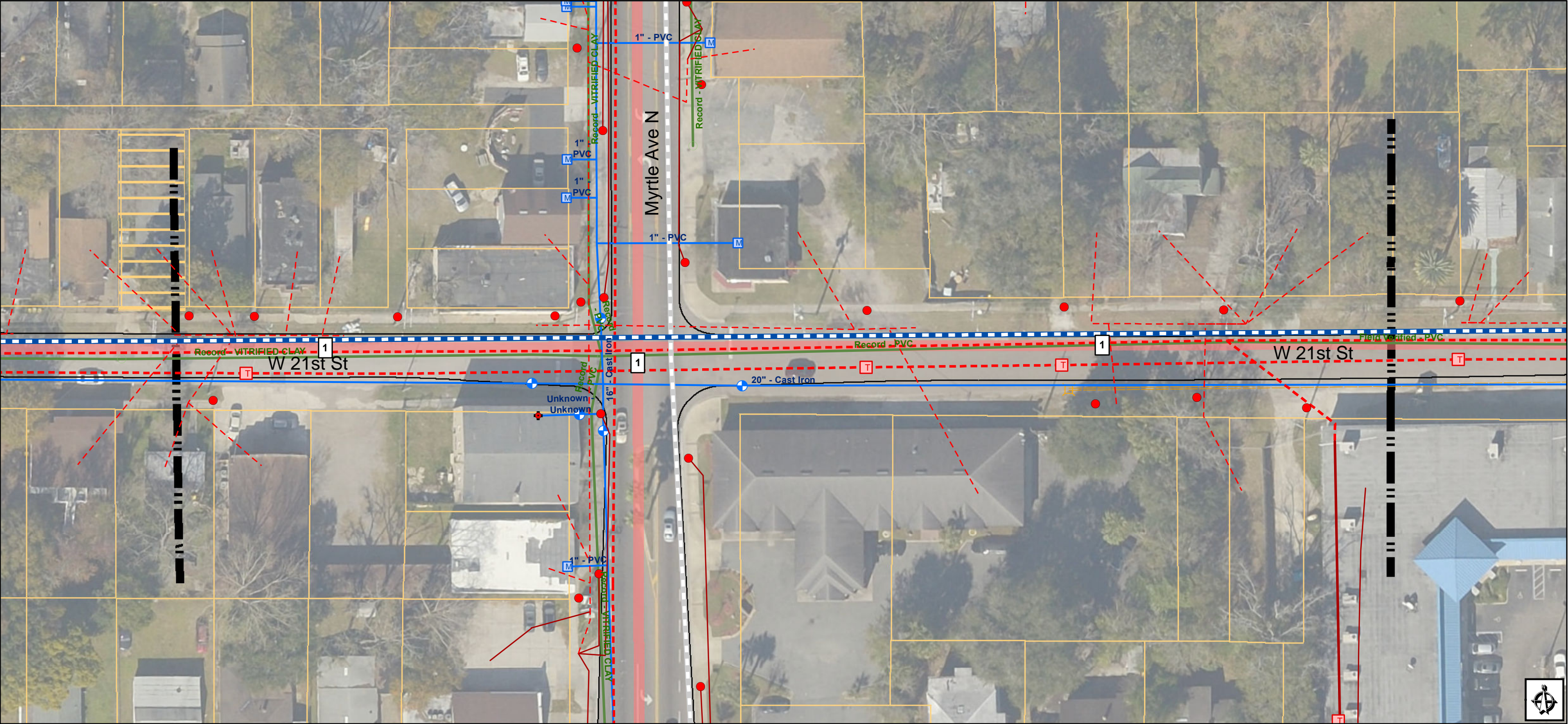
MLK Route Study

5025050Feet

Figure-MLK-20in WM-5

JACOBS

JEAsm
Building Communitysm



Label	Project Name	Type	Design Year	Construction Year	Agency
1	JP - FDOT - I95 and MLK Jr Interchange - WM Replacement	Water	2020	2022	JEA
2	Myrtle Av - 8th St W to MLK Jr Pkwy	Resurfacing	2016	2017	COJ

- Proposed Work**
- Proposed 20" Open Cut
 - Proposed 20" Auger Bore
 - Proposed 24" HDD
 - Proposed 20" Dry Line
 - Proposed 16" Route

Legend

Water Hydrant

Water Meter

Water Valve

Water Pipe

Raw Water Pipe

Control Structure

Storm Inlet

Storm Manhole

Storm Outfall

Stormwater Pump

Clay Storm Water Structure

Open Conveyance

Closed Conveyance

Exfiltration Trench

Clay Storm Pipe

Cross Culvert Pipe

Fiber Structure

Fiber Optic Cable Overhead

Fiber Optic Cable Underground

Reclaimed Valve

Reclaimed Meter

Reclaimed Hydrant

Reclaimed Fitting

Reclaimed Pipe

Sewer Valve

Sewer Meter

Sewer Station

Sewer Manhole

Force Main

Gravity Main

Abandoned / Decommissioned

Electric Pole

Primary OH Line

Secondary OH Line

Primary UG Line

Secondary UG Line

Electric OH Transmission Span

Powerline

Transmission Structure

Gas valve

Gas Main

Comm Marker

Comm

Unknown Utility

Edge of Pavement

COJ Resurfacing Project

JEA Grid Project

Parcel Line

FDOT Owned Property

COJ Owned Property

JEA Owned Property

NWI Wetlands

Easement

JEA Parcel Data (LDP)

MLK Route Study

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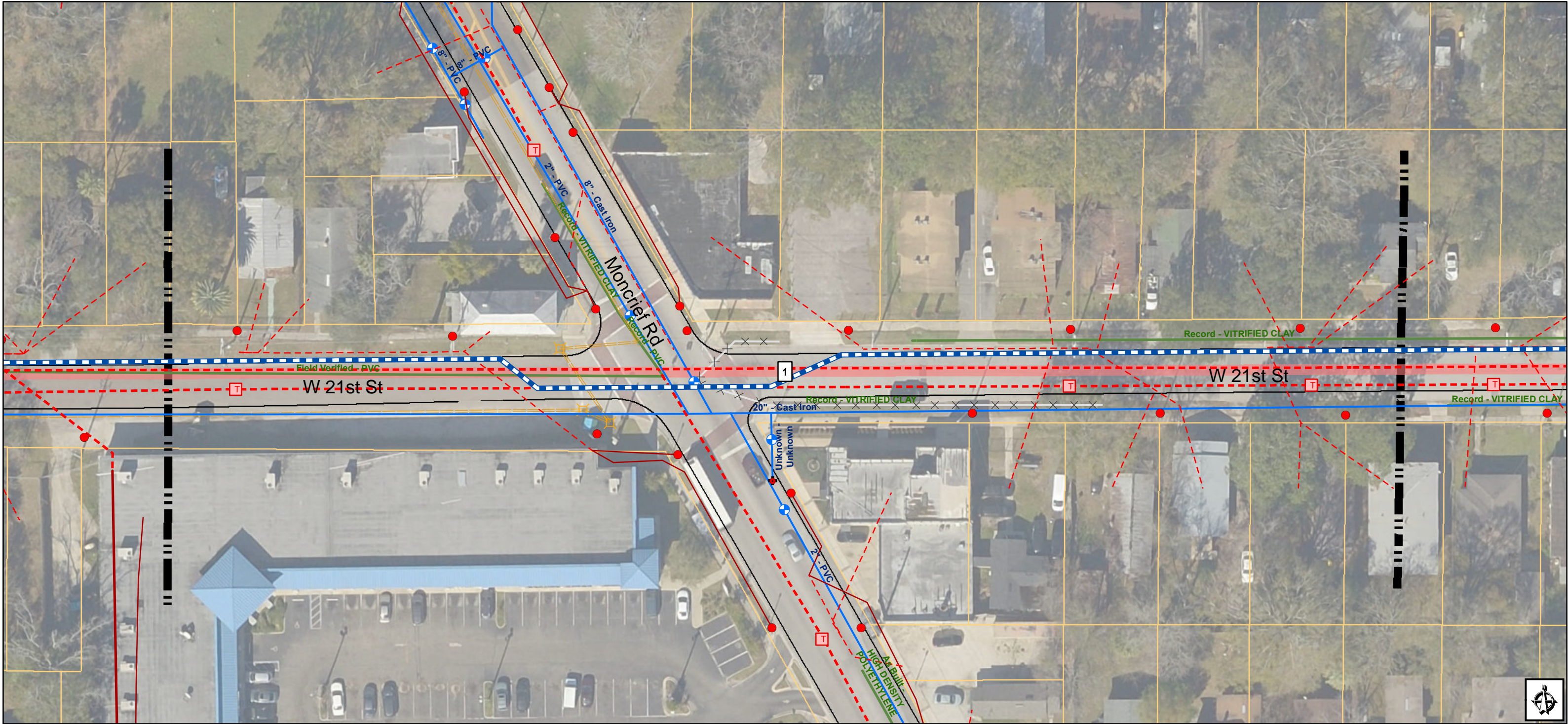
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Feet

Figure-MLK-20in WM-6



Label	Project Name	Type	Design Year	Construction Year	Agency
1	JP - FDOT - I95 and MLK Jr Interchange - WM Replacement	Water	2020	2022	JEA
2	Myrtle Av - 8th St W to MLK Jr Pkwy	Resurfacing	2016	2017	COJ

- Proposed Work**
- Proposed 20" Open Cut
 - Proposed 20" Auger Bore
 - Proposed 24" HDD
 - Proposed 20" Dry Line
 - Proposed 16" Route

Legend

Water Hydrant

Water Meter

Water Valve

Water Pipe

Raw Water Pipe

Control Structure

Storm Inlet

Storm Manhole

Storm Outfall

Stormwater Pump

Clay Storm Water Structure

Open Conveyance

Closed Conveyance

Exfiltration Trench

Clay Storm Pipe

Cross Culvert Pipe

Fiber Structure

Fiber Optic Cable Overhead

Fiber Optic Cable Underground

Reclaimed Valve

Reclaimed Meter

Reclaimed Hydrant

Reclaimed Fitting

Reclaimed Pipe

Sewer Valve

Sewer Meter

Sewer Station

Sewer Manhole

Force Main

Gravity Main

Abandoned / Decommissioned

Electric Pole

Primary OH Line

Secondary OH Line

Primary UG Line

Secondary UG Line

Electric OH Transmission Span

Powerline

Transmission Structure

Gas valve

Gas Main

Comm Marker

Comm

Unknown Utility

Edge of Pavement

COJ Resurfacing Project

JEA Grid Project

Parcel Line

FDOT Owned Property

COJ Owned Property

JEA Owned Property

NWI Wetlands

Easement

JEA Parcel Data (LDP)

MLK Route Study

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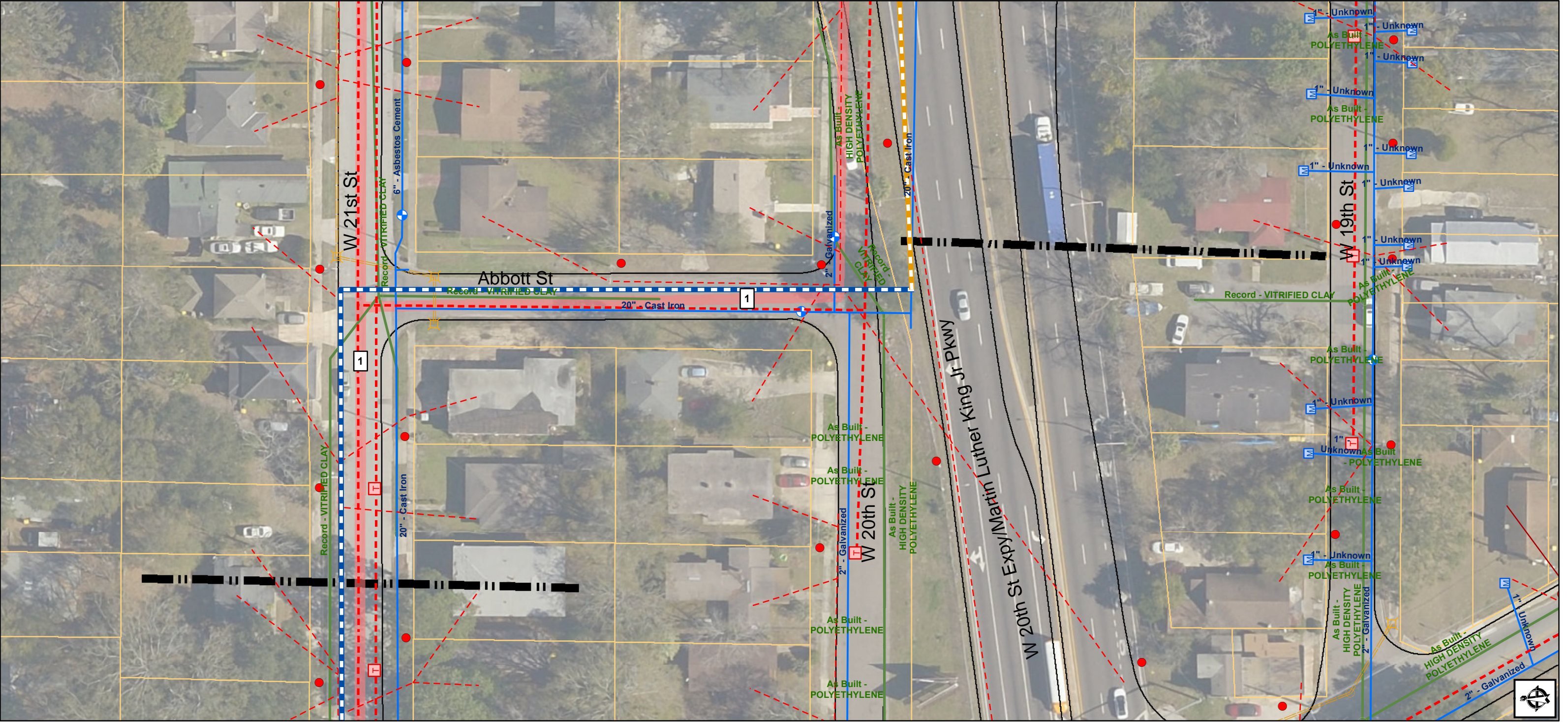
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Feet

Figure-MLK-20in WM-7



Label	Project Name	Type	Design Year	Construction Year	Agency
1	JP - FDOT - I95 and MLK Jr Interchange - WM Replacement	Water	2020	2022	JEA
2	Myrtle Av - 8th St W to MLK Jr Pkwy	Resurfacing	2016	2017	COJ

- Proposed Work**
- Proposed 20" Open Cut
 - Proposed 20" Auger Bore
 - Proposed 24" HDD
 - Proposed 20" Dry Line
 - Proposed 16" Route

Legend

Water Hydrant

Water Meter

Water Valve

Water Pipe

Raw Water Pipe

Control Structure

Storm Inlet

Storm Manhole

Storm Outfall

Stormwater Pump

Clay Storm Water Structure

Open Conveyance

Closed Conveyance

Exfiltration Trench

Clay Storm Pipe

Cross Culvert Pipe

Fiber Structure

Fiber Optic Cable Overhead

Fiber Optic Cable Underground

Reclaimed Valve

Reclaimed Meter

Reclaimed Hydrant

Reclaimed Fitting

Reclaimed Pipe

Sewer Valve

Sewer Meter

Sewer Station

Sewer Manhole

Force Main

Gravity Main

Abandoned / Decommissioned

Electric Pole

Primary OH Line

Secondary OH Line

Primary UG Line

Secondary UG Line

Electric OH Transmission Span

Powerline

Transmission Structure

Gas valve

Gas Main

Comm Marker

Comm

Unknown Utility

Edge of Pavement

COJ Resurfacing Project

JEA Grid Project

Parcel Line

FDOT Owned Property

COJ Owned Property

JEA Owned Property

NWI Wetlands

Easement

JEA Parcel Data (LDP)

Index Map

MLK Route Study

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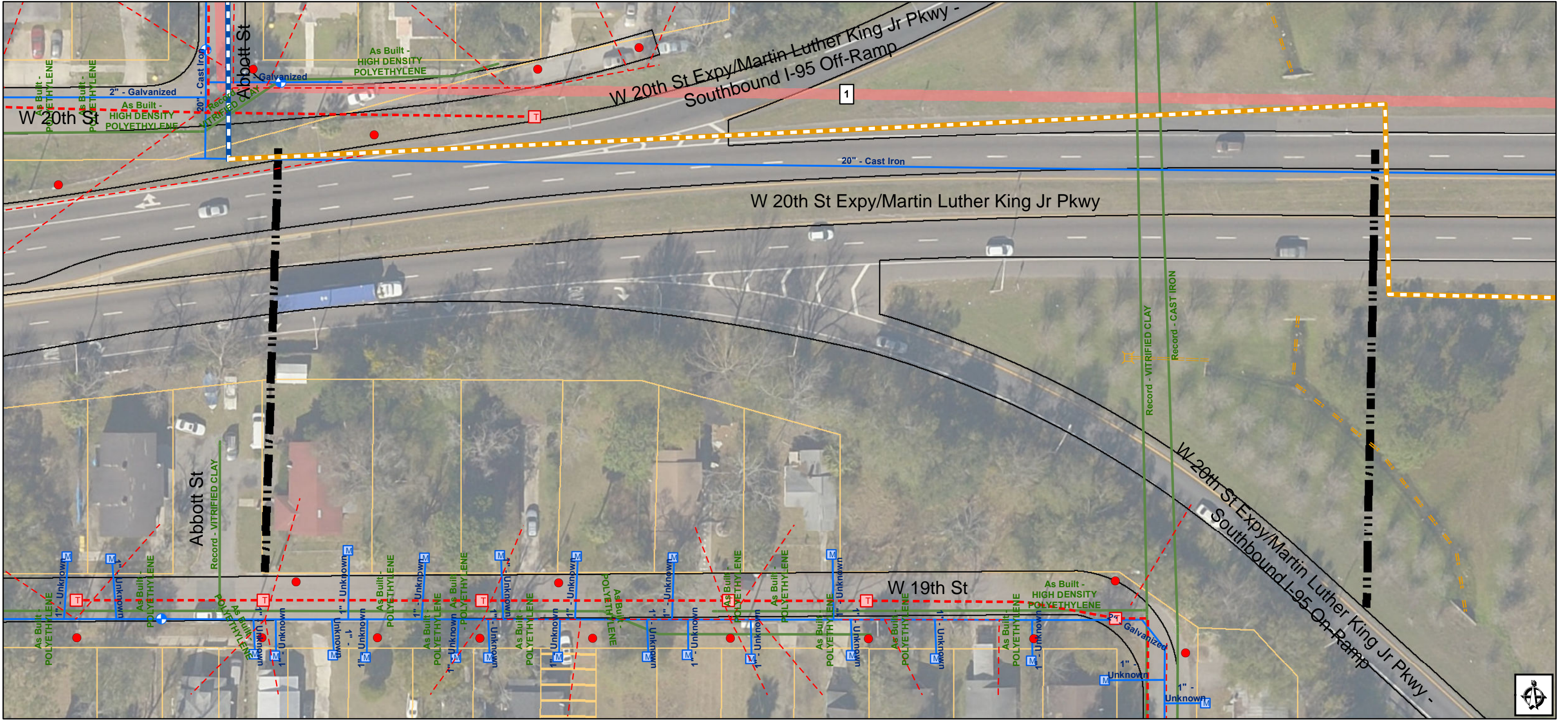
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Feet

Figure-MLK-20in WM-8



Label	Project Name	Type	Design Year	Construction Year	Agency
1	JP - FDOT - I95 and MLK Jr Interchange - WM Replacement	Water	2020	2022	JEA
2	Myrtle Av - 8th St W to MLK Jr Pkwy	Resurfacing	2016	2017	COJ

- Proposed Work**
- Proposed 20" Open Cut
 - Proposed 20" Auger Bore
 - Proposed 24" HDD
 - Proposed 20" Dry Line
 - Proposed 16" Route

Legend

Water Hydrant

Water Meter

Water Valve

Water Pipe

Raw Water Pipe

Control Structure

Storm Inlet

Storm Manhole

Storm Outfall

Stormwater Pump

Clay Storm Water Structure

Open Conveyance

Closed Conveyance

Exfiltration Trench

Clay Storm Pipe

Cross Culvert Pipe

Fiber Structure

Fiber Optic Cable Overhead

Fiber Optic Cable Underground

Reclaimed Valve

Reclaimed Meter

Reclaimed Hydrant

Reclaimed Fitting

Reclaimed Pipe

Sewer Valve

Sewer Meter

Sewer Station

Sewer Manhole

Force Main

Gravity Main

Abandoned / Decommissioned

Electric Pole

Primary OH Line

Secondary OH Line

Primary UG Line

Secondary UG Line

Electric OH Transmission Span

Powerline

Transmission Structure

Gas valve

Gas Main

Comm Marker

Comm

Unknown Utility

Edge of Pavement

COJ Resurfacing Project

JEA Grid Project

Parcel Line

FDOT Owned Property

COJ Owned Property

JEA Owned Property

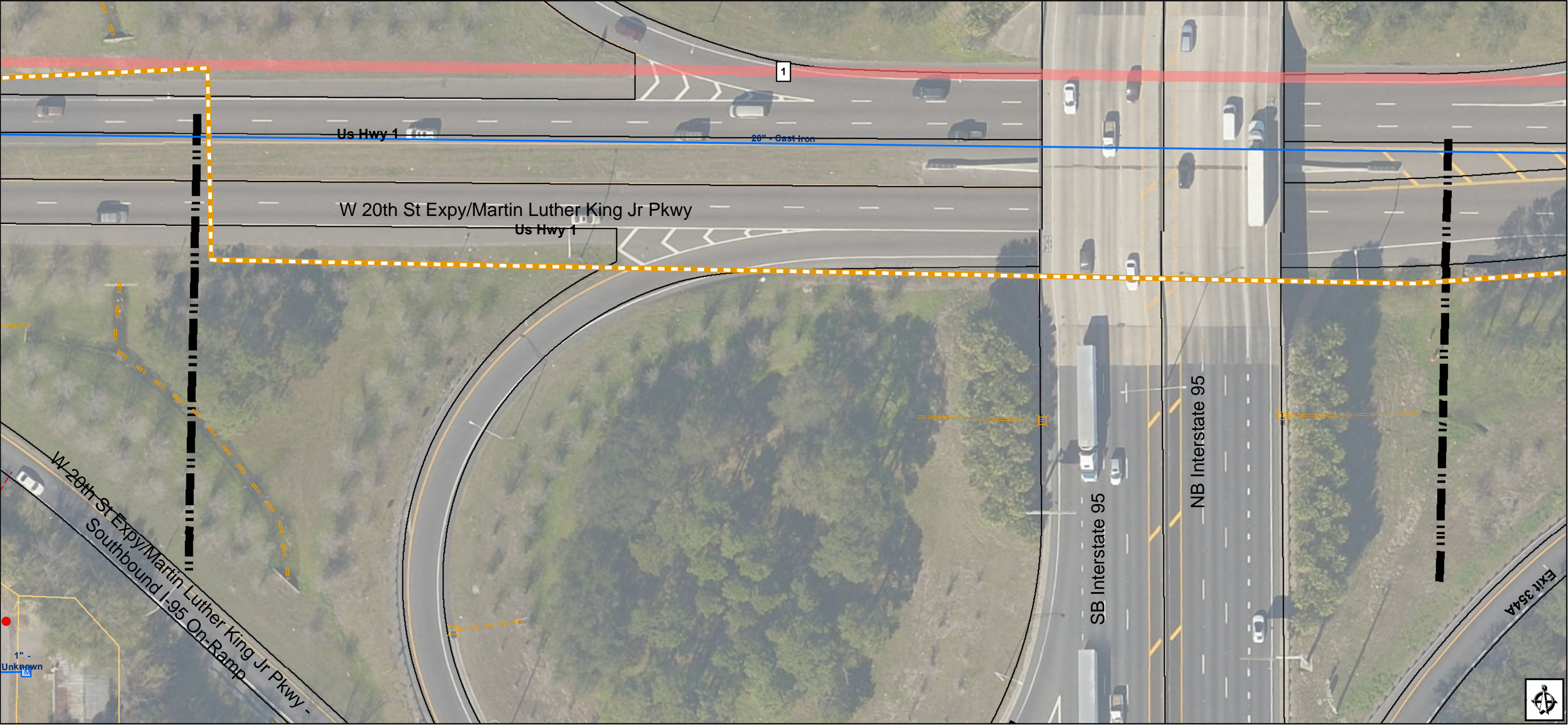
NWI Wetlands

Easement

JEA Parcel Data (LDP)

MLK Route Study

Figure-MLK-20in WM-9



Label	Project Name	Type	Design Year	Construction Year	Agency
1	JP - FDOT - I95 and MLK Jr Interchange - WM Replacement	Water	2020	2022	JEA
2	Myrtle Av - 8th St W to MLK Jr Pkwy	Resurfacing	2016	2017	COJ

- Proposed Work**
- Proposed 20" Open Cut
 - Proposed 20" Auger Bore
 - Proposed 24" HDD
 - Proposed 20" Dry Line
 - Proposed 16" Route

Legend

Water Hydrant

Water Meter

Water Valve

Water Pipe

Raw Water Pipe

Control Structure

Storm Inlet

Storm Manhole

Storm Outfall

Stormwater Pump

Clay Storm Water Structure

Open Conveyance

Closed Conveyance

Exfiltration Trench

Clay Storm Pipe

Cross Culvert Pipe

Fiber Structure

Fiber Optic Cable Overhead

Fiber Optic Cable Underground

Reclaimed Valve

Reclaimed Meter

Reclaimed Hydrant

Reclaimed Fitting

Reclaimed Pipe

Sewer Valve

Sewer Meter

Sewer Station

Sewer Manhole

Force Main

Gravity Main

Abandoned / Decommissioned

Electric Pole

Primary OH Line

Secondary OH Line

Primary UG Line

Secondary UG Line

Electric OH Transmission Span

Powerline

Transmission Structure

Gas valve

Gas Main

Comm Marker

Comm

Unknown Utility

Edge of Pavement

COJ Resurfacing Project

JEA Grid Project

Parcel Line

FDOT Owned Property

COJ Owned Property

JEA Owned Property

NWI Wetlands

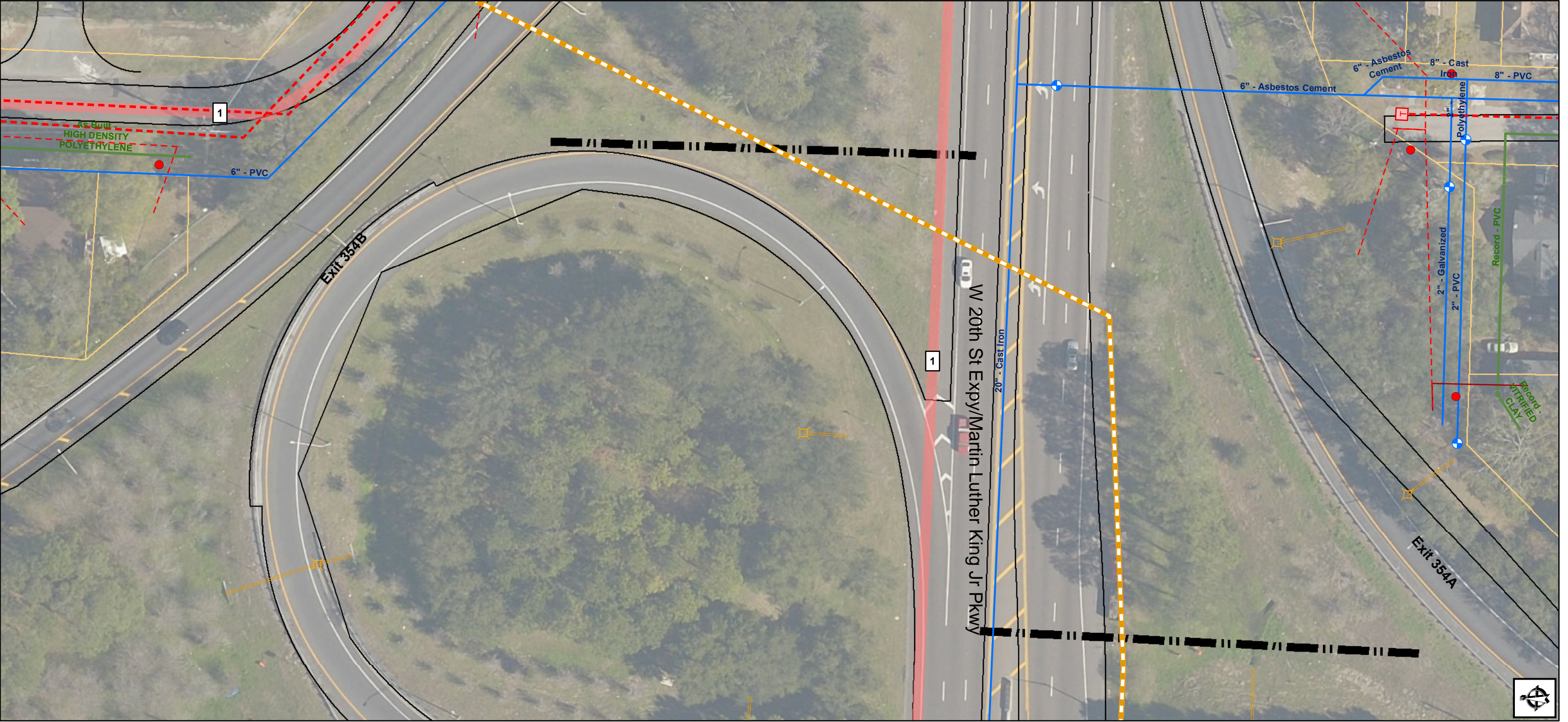
Easement

JEA Parcel Data (LDP)

Index Map

MLK Route Study

Figure-MLK-20in WM-10



Label	Project Name	Type	Design Year	Construction Year	Agency
1	JP - FDOT - I95 and MLK Jr Interchange - WM Replacement	Water	2020	2022	JEA
2	Myrtle Av - 8th St W to MLK Jr Pkwy	Resurfacing	2016	2017	COJ

- Proposed Work**
- Proposed 20" Open Cut
 - Proposed 20" Auger Bore
 - Proposed 24" HDD
 - Proposed 20" Dry Line
 - Proposed 16" Route

Legend

Water Hydrant

Water Meter

Water Valve

Water Pipe

Raw Water Pipe

Control Structure

Storm Inlet

Storm Manhole

Storm Outfall

Stormwater Pump

Clay Storm Water Structure

Open Conveyance

Closed Conveyance

Exfiltration Trench

Clay Storm Pipe

Cross Culvert Pipe

Fiber Structure

Fiber Optic Cable Overhead

Fiber Optic Cable Underground

Reclaimed Valve

Reclaimed Meter

Reclaimed Hydrant

Reclaimed Fitting

Reclaimed Pipe

Sewer Valve

Sewer Meter

Sewer Station

Sewer Manhole

Force Main

Gravity Main

Abandoned / Decommissioned

Electric Pole

Primary OH Line

Secondary OH Line

Primary UG Line

Secondary UG Line

Electric OH Transmission Span

Powerline

Transmission Structure

Gas valve

Gas Main

Comm Marker

Comm

Unknown Utility

Edge of Pavement

COJ Resurfacing Project

JEA Grid Project

Parcel Line

FDOT Owned Property

COJ Owned Property

JEA Owned Property

NWI Wetlands

Easement

JEA Parcel Data (LDP)

MLK Route Study

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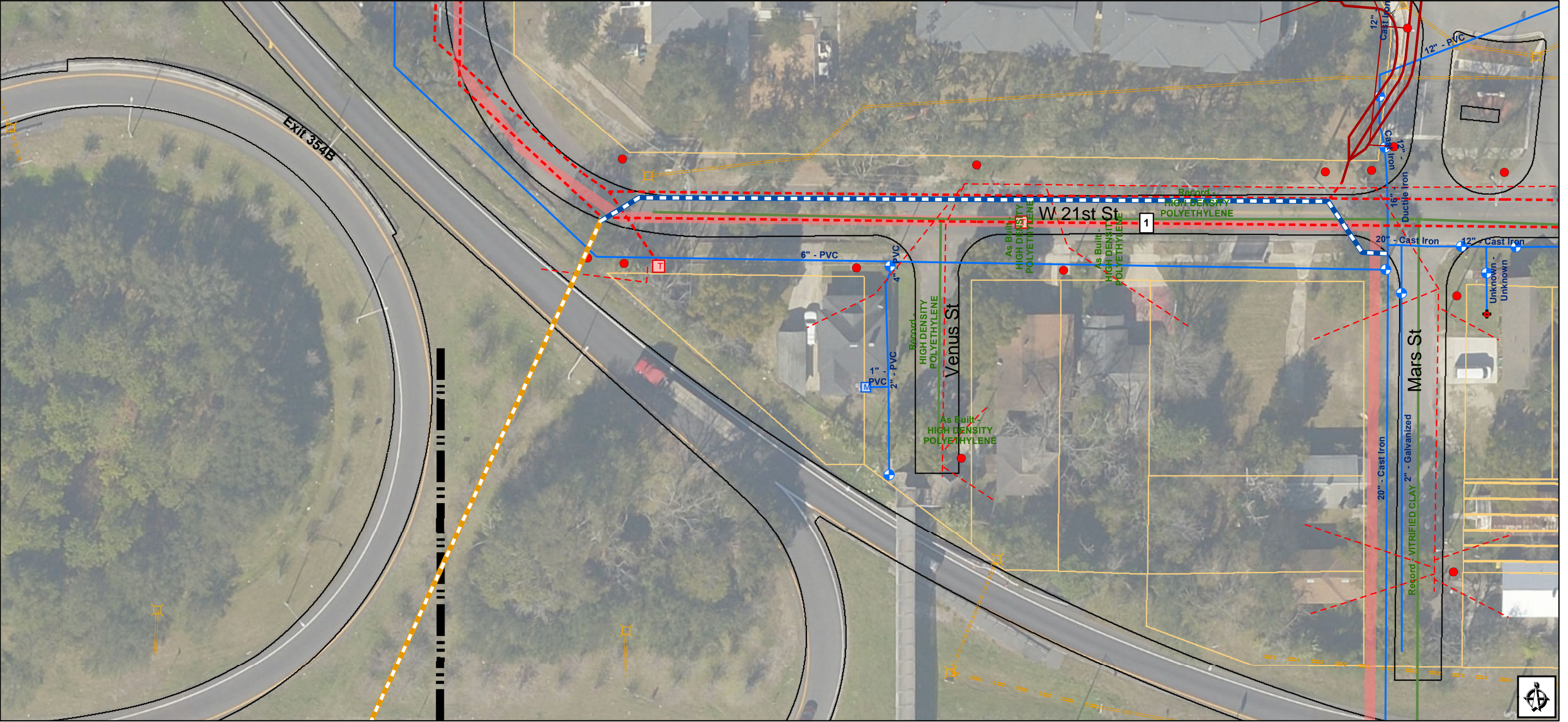
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Feet

Figure-MLK-20in WM-11



Label	Project Name	Type	Design Year	Construction Year	Agency
1	JP - FDOT - I95 and MLK Jr Interchange - WM Replacement	Water	2020	2022	JEA
2	Myrtle Av - 8th St W to MLK Jr Pkwy	Resurfacing	2016	2017	COJ

- Proposed Work**
- Proposed 20" Open Cut
 - Proposed 20" Auger Bore
 - Proposed 24" HDD
 - Proposed 20" Dry Line
 - Proposed 16" Route

Legend

Water Hydrant

Water Meter

Water Valve

Water Pipe

Raw Water Pipe

Control Structure

Storm Inlet

Storm Manhole

Storm Outfall

Stormwater Pump

Clay Storm Water Structure

Open Conveyance

Closed Conveyance

Exfiltration Trench

Clay Storm Pipe

Cross Culvert Pipe

Fiber Structure

Fiber Optic Cable Overhead

Fiber Optic Cable Underground

Reclaimed Valve

Reclaimed Meter

Reclaimed Hydrant

Reclaimed Fitting

Reclaimed Pipe

Sewer Valve

Sewer Meter

Sewer Station

Sewer Manhole

Force Main

Gravity Main

Abandoned / Decommissioned

Electric Pole

Primary OH Line

Secondary OH Line

Primary UG Line

Secondary UG Line

Electric OH Transmission Span

Transmission Structure

Gas valve

Gas Main

Comm Marker

Comm

Unknown Utility

Edge of Pavement

COJ Resurfacing Project

JEA Grid Project

Parcel Line

FDOT Owned Property

COJ Owned Property

JEA Owned Property

NWI Wetlands

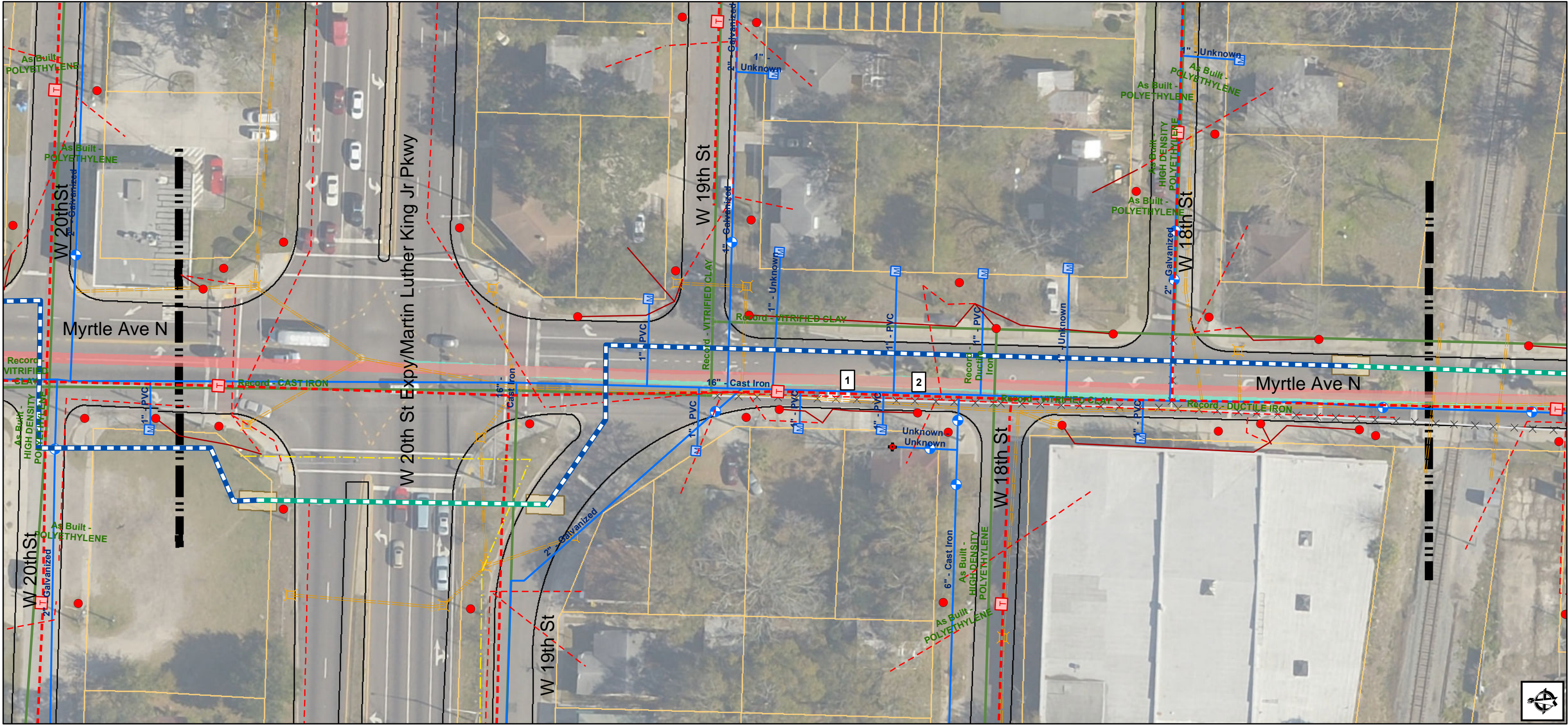
Easement

JEA Parcel Data (LDP)

MLK Route Study

Figure-MLK-20in WM-12

Attachment 3
16-inch WM Base Route – Figures



Label	Project Name	Type	Design Year	Construction Year	Agency
1	JP - FDOT - I95 and MLK Jr Interchange - WM Replacement	Water	2020	2022	JEA
2	Myrtle Av - 8th St W to MLK Jr Pkwy	Resurfacing	2016	2017	COJ

Proposed Work

- Proposed 16" Open Cut
- Proposed 16" Auger Bore

Proposed 20" Route

Legend

Water Hydrant

Water Meter

Water Valve

Water Pipe

Raw Water Pipe

Control Structure

Storm Inlet

Storm Manhole

Storm Outfall

Stormwater Pump

Clay Storm Water Structure

Open Conveyance

Closed Conveyance

Exfiltration Trench

Clay Storm Pipe

Cross Culvert Pipe

Fiber Structure

Fiber Optic Cable Overhead

Fiber Optic Cable Underground

Reclaimed Valve

Reclaimed Meter

Reclaimed Hydrant

Reclaimed Fitting

Reclaimed Pipe

Sewer Valve

Sewer Meter

Sewer Station

Sewer Manhole

Force Main

Gravity Main

Abandoned / Decommissioned

Electric Pole

Primary OH Line

Secondary OH Line

Primary UG Line

Secondary UG Line

Electric OH Transmission Span

Powerline

Transmission Structure

Gas valve

Gas Main

Comm Marker

Comm

Unknown Utility

Edge of Pavement

COJ Resurfacing Project

JEA Grid Project

Parcel Line

FDOT Owned Property

COJ Owned Property

JEA Owned Property

NWI Wetlands

Easement

JEA Parcel Data (LDP)

Index Map

MLK Route Study

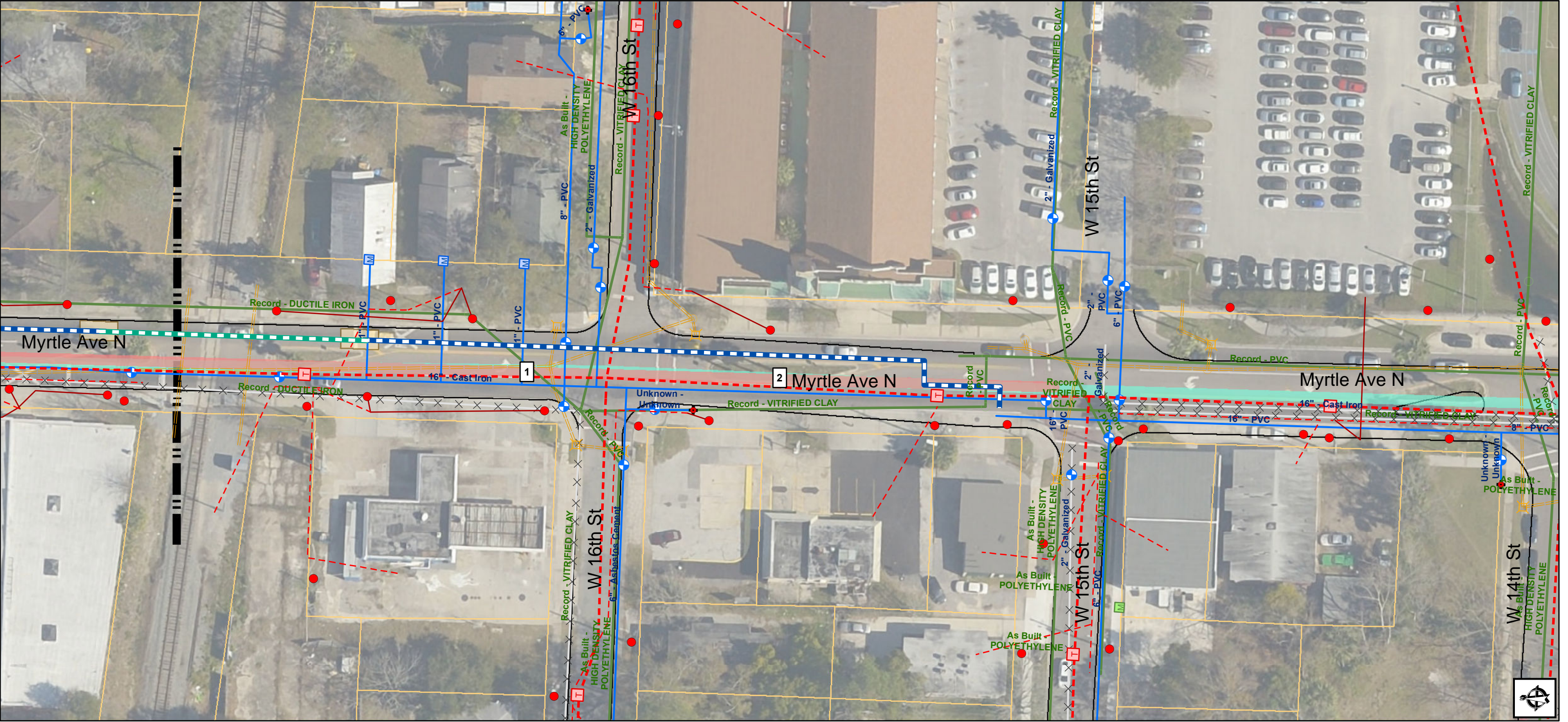
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Feet

Figure-MLK-16in WM-2

JACOBS

JEAsm
Building Communitysm



Label	Project Name	Type	Design Year	Construction Year	Agency
1	JP - FDOT - I95 and MLK Jr Interchange - WM Replacement	Water	2020	2022	JEA
2	Myrtle Av - 8th St W to MLK Jr Pkwy	Resurfacing	2016	2017	COJ

Proposed Work

Proposed 16" Open Cut

Proposed 16" Auger Bore

Legend

Water Hydrant

Water Meter

Water Valve

Water Pipe

Raw Water Pipe

Control Structure

Storm Inlet

Storm Manhole

Storm Outfall

Stormwater Pump

Clay Storm Water Structure

Open Conveyance

Closed Conveyance

Exfiltration Trench

Clay Storm Pipe

Cross Culvert Pipe

Fiber Structure

Fiber Optic Cable Overhead

Fiber Optic Cable Underground

Reclaimed Valve

Reclaimed Meter

Reclaimed Hydrant

Reclaimed Fitting

Reclaimed Pipe

Sewer Valve

Sewer Meter

Sewer Station

Sewer Manhole

Force Main

Gravity Main

Abandoned / Decommissioned

Electric Pole

Primary OH Line

Secondary OH Line

Primary UG Line

Secondary UG Line

Electric OH Transmission Span

Powerline

Transmission Structure

Gas valve

Gas Main

Comm Marker

Comm

Unknown Utility

Edge of Pavement

COJ Resurfacing Project

JEA Grid Project

Parcel Line

FDOT Owned Property

COJ Owned Property

JEA Owned Property

NWI Wetlands

Easement

JEA Parcel Data (LDP)

MLK Route Study

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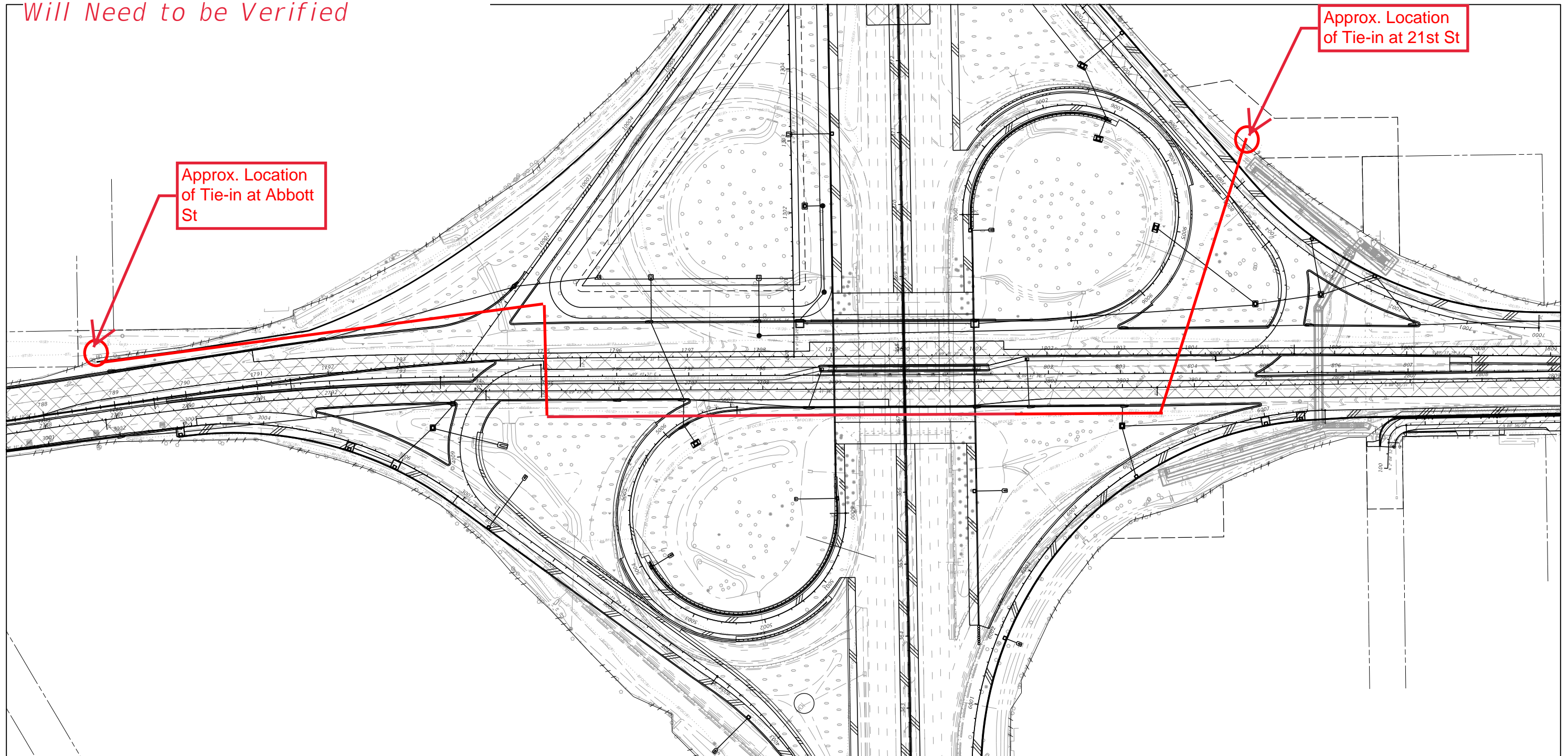
JACOBS

Figure-MLK-16in WM-3

JEA
Building Communitysm

Attachment 4
20-inch WM (by others)
FDOT Interchange Project

Drainage Inverts and Clearances
- *Will Need to be Verified*



Attachment 5
US DOT Crossing Inventory Form
Inventory No. 713576Y

U. S. DOT CROSSING INVENTORY FORM

DEPARTMENT OF TRANSPORTATION

FEDERAL RAILROAD ADMINISTRATION

OMB No. 2130-0017

Instructions for the initial reporting of the following types of new or previously unreported crossings: For public highway-rail grade crossings, complete the entire inventory Form. For private highway-rail grade crossings, complete the Header, Parts I and II, and the Submission Information section. For public pathway grade crossings (including pedestrian station grade crossings), complete the Header, Parts I and II, and the Submission Information section. For Private pathway grade crossings, complete the Header, Parts I and II, and the Submission Information section. For grade-separated highway-rail or pathway crossings (including pedestrian station crossings), complete the Header, Part I, and the Submission Information section. For changes to existing data, complete the Header, Part I Items 1-3, and the Submission Information section, in addition to the updated data fields. Note: For private crossings only, Part I Item 20 and Part III Item 2.K. are required unless otherwise noted. An asterisk * denotes an optional field.

A. Revision Date (MM/DD/YYYY) 04 / 22 / 2020	B. Reporting Agency <input type="checkbox"/> Railroad <input type="checkbox"/> Transit <input checked="" type="checkbox"/> State <input type="checkbox"/> Other	C. Reason for Update (Select only one) <input checked="" type="checkbox"/> Change in Data <input type="checkbox"/> New Crossing <input type="checkbox"/> Closed <input type="checkbox"/> Re-Open <input type="checkbox"/> Date Change Only <input type="checkbox"/> Change in Primary Operating RR <input type="checkbox"/> No Train Traffic <input type="checkbox"/> Quiet Zone Update <input type="checkbox"/> Admin. Correction	D. DOT Crossing Inventory Number 713576Y
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Part I: Location and Classification Information

1. Primary Operating Railroad Norfolk Southern Railway Company [NS]		2. State FLORIDA		3. County DUVAL	
4. City / Municipality <input checked="" type="checkbox"/> In JACKSONVILLE <input type="checkbox"/> Near		5. Street/Road Name & Block Number MYRTLE AVENUE (Street/Road Name) * (Block Number)		6. Highway Type & No. LS	
7. Do Other Railroads Operate a Separate Track at Crossing? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes, Specify RR			8. Do Other Railroads Operate Over Your Track at Crossing? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes, Specify RR		
9. Railroad Division or Region <input type="checkbox"/> None GEORGIA		10. Railroad Subdivision or District <input type="checkbox"/> None VALDOSTA		11. Branch or Line Name <input type="checkbox"/> None SPRINGFIELD LEAD	
12. RR Milepost SL 0002.730 (prefix) (nnnn.nnn) (suffix)					
13. Line Segment *		14. Nearest RR Timetable Station JACKSONVILLE		15. Parent RR (if applicable) <input checked="" type="checkbox"/> N/A	
16. Crossing Owner (if applicable) <input checked="" type="checkbox"/> N/A					
17. Crossing Type <input checked="" type="checkbox"/> Public <input type="checkbox"/> Private		18. Crossing Purpose <input checked="" type="checkbox"/> Highway <input type="checkbox"/> Pathway, Ped. <input type="checkbox"/> Station, Ped.		19. Crossing Position <input checked="" type="checkbox"/> At Grade <input type="checkbox"/> RR Under <input type="checkbox"/> RR Over	
20. Public Access (if Private Crossing) <input type="checkbox"/> Yes <input type="checkbox"/> No		21. Type of Train <input checked="" type="checkbox"/> Freight <input type="checkbox"/> Transit <input type="checkbox"/> Intercity Passenger <input type="checkbox"/> Shared Use Transit <input type="checkbox"/> Commuter <input type="checkbox"/> Tourist/Other		22. Average Passenger Train Count Per Day <input type="checkbox"/> Less Than One Per Day <input type="checkbox"/> Number Per Day 0	
23. Type of Land Use <input type="checkbox"/> Open Space <input type="checkbox"/> Farm <input type="checkbox"/> Residential <input checked="" type="checkbox"/> Commercial <input type="checkbox"/> Industrial <input type="checkbox"/> Institutional <input type="checkbox"/> Recreational <input type="checkbox"/> RR Yard					
24. Is there an Adjacent Crossing with a Separate Number? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes, Provide Crossing Number			25. Quiet Zone (FRA provided) <input checked="" type="checkbox"/> No <input type="checkbox"/> 24 Hr <input type="checkbox"/> Partial <input type="checkbox"/> Chicago Excused Date Established		
26. HSR Corridor ID <input checked="" type="checkbox"/> N/A		27. Latitude in decimal degrees (WGS84 std: nn.nnnnnnn) 30.3540207		28. Longitude in decimal degrees (WGS84 std: -nnn.nnnnnnn) -81.6758602	
29. Lat/Long Source <input checked="" type="checkbox"/> Actual <input type="checkbox"/> Estimated					
30.A. Railroad Use *			31.A. State Use *		
30.B. Railroad Use *			31.B. State Use *		
30.C. Railroad Use *			31.C. State Use *		
30.D. Railroad Use *			31.D. State Use *		
32.A. Narrative (Railroad Use) *			32.B. Narrative (State Use) *		
33. Emergency Notification Telephone No. (posted) 800-946-4744		34. Railroad Contact (Telephone No.) 800-946-4744		35. State Contact (Telephone No.) 850-414-4907	

Part II: Railroad Information

1. Estimated Number of Daily Train Movements				
1.A. Total Day Thru Trains (6 AM to 6 PM) 0	1.B. Total Night Thru Trains (6 PM to 6 AM) 0	1.C. Total Switching Trains 2	1.D. Total Transit Trains 0	1.E. Check if Less Than One Movement Per Day <input type="checkbox"/> How many trains per week?
2. Year of Train Count Data (YYYY) 2020		3. Speed of Train at Crossing 3.A. Maximum Timetable Speed (mph) 10 3.B. Typical Speed Range Over Crossing (mph) From 5 to 10		
4. Type and Count of Tracks Main 1 Siding 0 Yard 0 Transit 0 Industry 0				
5. Train Detection (Main Track only) <input type="checkbox"/> Constant Warning Time <input type="checkbox"/> Motion Detection <input type="checkbox"/> AFO <input type="checkbox"/> PTC <input type="checkbox"/> DC <input checked="" type="checkbox"/> Other <input type="checkbox"/> None				
6. Is Track Signaled? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		7.A. Event Recorder <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		7.B. Remote Health Monitoring <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No

U. S. DOT CROSSING INVENTORY FORM

A. Revision Date (MM/DD/YYYY) 04/22/2020		PAGE 2		D. Crossing Inventory Number (7 char.) 713576Y	
Part III: Highway or Pathway Traffic Control Device Information					
1. Are there Signs or Signals? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		2. Types of Passive Traffic Control Devices associated with the Crossing			
2.A. Crossbuck Assemblies (count) 2		2.B. STOP Signs (R1-1) (count) 0	2.C. YIELD Signs (R1-2) (count) 0	2.D. Advance Warning Signs (Check all that apply; include count) <input type="checkbox"/> None <input checked="" type="checkbox"/> W10-1 2 <input type="checkbox"/> W10-3 0 <input type="checkbox"/> W10-11 0 <input type="checkbox"/> W10-2 0 <input type="checkbox"/> W10-4 0 <input type="checkbox"/> W10-12 0	
2.E. Low Ground Clearance Sign (W10-5) <input type="checkbox"/> Yes (count 0) <input checked="" type="checkbox"/> No		2.F. Pavement Markings <input checked="" type="checkbox"/> Stop Lines <input type="checkbox"/> Dynamic Envelope <input checked="" type="checkbox"/> RR Xing Symbols <input type="checkbox"/> None		2.G. Channelization Devices/Medians <input checked="" type="checkbox"/> All Approaches <input checked="" type="checkbox"/> Median <input type="checkbox"/> One Approach <input type="checkbox"/> None	
2.H. EXEMPT Sign (R15-3) <input type="checkbox"/> Yes <input type="checkbox"/> No		2.I. ENS Sign (I-13) Displayed <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No			
2.J. Other MUTCD Signs Specify Type _____ Count _____ Specify Type _____ Count _____ Specify Type _____ Count _____		2.K. Private Crossing Signs (if private) <input type="checkbox"/> Yes <input type="checkbox"/> No		2.L. LED Enhanced Signs (List types)	
3. Types of Train Activated Warning Devices at the Grade Crossing (specify count of each device for all that apply)					
3.A. Gate Arms (count) Roadway 2 Pedestrian 0		3.B. Gate Configuration <input type="checkbox"/> 2 Quad <input type="checkbox"/> Full (Barrier) Resistance <input type="checkbox"/> 3 Quad <input type="checkbox"/> Median Gates <input type="checkbox"/> 4 Quad		3.C. Cantilevered (or Bridged) Flashing Light Structures (count) Over Traffic Lane 3 <input type="checkbox"/> Incandescent Not Over Traffic Lane 0 <input checked="" type="checkbox"/> LED	
3.D. Mast Mounted Flashing Lights (count of masts) 4 <input type="checkbox"/> Incandescent <input checked="" type="checkbox"/> LED <input checked="" type="checkbox"/> Back Lights Included <input type="checkbox"/> Side Lights Included		3.E. Total Count of Flashing Light Pairs 7			
3.F. Installation Date of Current Active Warning Devices: (MM/YYYY) _____/_____/_____ <input type="checkbox"/> Not Required		3.G. Wayside Horn <input type="checkbox"/> Yes Installed on (MM/YYYY) ____/____/_____ <input checked="" type="checkbox"/> No		3.H. Highway Traffic Signals Controlling Crossing <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
3.I. Bells (count) 1		3.J. Non-Train Active Warning <input checked="" type="checkbox"/> Flagging/Flagman <input type="checkbox"/> Manually Operated Signals <input type="checkbox"/> Watchman <input type="checkbox"/> Floodlighting <input type="checkbox"/> None		3.K. Other Flashing Lights or Warning Devices Count 6 Specify type gate lights	
4.A. Does nearby Hwy Intersection have Traffic Signals? <input type="checkbox"/> Yes <input type="checkbox"/> No		4.B. Hwy Traffic Signal Interconnection <input type="checkbox"/> Not Interconnected <input type="checkbox"/> For Traffic Signals <input type="checkbox"/> For Warning Signs		4.C. Hwy Traffic Signal Preemption <input type="checkbox"/> Simultaneous <input type="checkbox"/> Advance	
5. Highway Traffic Pre-Signals <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Storage Distance * 0 Stop Line Distance * 0		6. Highway Monitoring Devices (Check all that apply) <input type="checkbox"/> Yes - Photo/Video Recording <input type="checkbox"/> Yes - Vehicle Presence Detection <input type="checkbox"/> None			
Part IV: Physical Characteristics					
1. Traffic Lanes Crossing Railroad <input type="checkbox"/> One-way Traffic <input type="checkbox"/> Two-way Traffic Number of Lanes 2 <input type="checkbox"/> Divided Traffic		2. Is Roadway/Pathway Paved? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		3. Does Track Run Down a Street? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
4. Is Crossing Illuminated? (Street lights within approx. 50 feet from nearest rail) <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		5. Crossing Surface (on Main Track, multiple types allowed) Installation Date * (MM/YYYY) ____/____/_____ <input type="checkbox"/> 1 Timber <input type="checkbox"/> 2 Asphalt <input type="checkbox"/> 3 Asphalt and Timber <input checked="" type="checkbox"/> 4 Concrete <input type="checkbox"/> 5 Concrete and Rubber <input type="checkbox"/> 6 Rubber <input type="checkbox"/> 7 Metal <input type="checkbox"/> 8 Unconsolidated <input type="checkbox"/> 9 Composite <input type="checkbox"/> 10 Other (specify) _____			
6. Intersecting Roadway within 500 feet? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes, Approximate Distance (feet) _____		7. Smallest Crossing Angle <input type="checkbox"/> 0° - 29° <input type="checkbox"/> 30° - 59° <input type="checkbox"/> 60° - 90°		8. Is Commercial Power Available? * <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Part V: Public Highway Information					
1. Highway System <input type="checkbox"/> (01) Interstate Highway System <input type="checkbox"/> (02) Other Nat Hwy System (NHS) <input checked="" type="checkbox"/> (03) Federal AID, Not NHS <input type="checkbox"/> (08) Non-Federal Aid		2. Functional Classification of Road at Crossing <input type="checkbox"/> (0) Rural <input checked="" type="checkbox"/> (1) Urban <input type="checkbox"/> (1) Interstate <input checked="" type="checkbox"/> (5) Major Collector <input type="checkbox"/> (2) Other Freeways and Expressways <input type="checkbox"/> (3) Other Principal Arterial <input type="checkbox"/> (6) Minor Collector <input type="checkbox"/> (4) Minor Arterial <input type="checkbox"/> (7) Local		3. Is Crossing on State Highway System? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No 5. Linear Referencing System (LRS Route ID) * 72000032 6. LRS Milepost * 2.166	
4. Highway Speed Limit 30 _____ MPH <input type="checkbox"/> Posted <input checked="" type="checkbox"/> Statutory					
7. Annual Average Daily Traffic (AADT) Year 2017 AADT 2200		8. Estimated Percent Trucks 1 _____ %		9. Regularly Used by School Buses? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Average Number per Day 72	
10. Emergency Services Route <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No					
Submission Information - This information is used for administrative purposes and is not available on the public website.					
Submitted by _____ Organization _____ Phone _____ Date _____ Public reporting burden for this information collection is estimated to average 30 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed and completing and reviewing the collection of information. According to the Paperwork Reduction Act of 1995, a federal agency may not conduct or sponsor, and a person is not required to, nor shall a person be subject to a penalty for failure to comply with, a collection of information unless it displays a currently valid OMB control number. The valid OMB control number for information collection is 2130-0017. Send comments regarding this burden estimate or any other aspect of this collection, including for reducing this burden to: Information Collection Officer, Federal Railroad Administration, 1200 New Jersey Ave. SE, MS-25 Washington, DC 20590.					