

# CENTRAL BROWARD EAST-WEST TRANSIT STUDY

## Maintenance Facility Technical Memorandum



January 2013



**JACOBS**

**AECOM**

CENTRAL BROWARD



TRANSIT STUDY

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## Executive Summary

AECOM is contracted by Jacobs Engineering to find suitable location(s) for a storage and maintenance facility for Streetcar technology as a part of the Central Broward East-West Transit Study. Jacobs Engineering is the prime consultant in charge of managing the East-West Transit Study and is analyzing alternatives for different modes of transportation throughout the central Broward County corridor in South Florida.

Overall, the Central Broward East-West Transit Study is being conducted by the Florida Department of Transportation (FDOT) and its partners: Broward County Transit (BCT), South Florida Regional Transportation Authority (SFRTA), and the Broward Metropolitan Planning Organization to develop a premium transit service in central Broward County.

The Study corridor boundaries are located in the central part of Broward County, between Oakland Park Boulevard to the north, the Weston-Sawgrass area to the west, Griffin Road/Stirling Road to the south, and the Intracoastal Waterway to the east.

The goal of the Central Broward East-West Transit Study is to determine how to connect the western portions of the County with downtown Fort Lauderdale and the Fort Lauderdale-Hollywood International Airport and to determine a Locally Preferred Alternative (LPA). Additionally, the transit solution will support the economic development goals of the region as well as local land use plans, and improve transit choices that appeal to a larger population base.

There are two main alternatives which are being considered in the Central Broward East-West Transit Study. These alternatives are:

- The SR 7/Broward Boulevard Alternative - This alternative proposes premium bus from Sawgrass Mills to the Broward Boulevard Tri-Rail Station. The modern streetcar would continue service to downtown Fort Lauderdale, connecting with the Wave, the Fort Lauderdale-Hollywood International Airport, and at the Griffin Road Tri-Rail Station.
- The Griffin Road Alternative s- These alternatives propose Premium Bus from Sawgrass Mills to the South Florida Educational Center (SFEC), then either Modern Streetcar or Premium Bus (depending on the Alternative chosen) from the SFEC to the Griffin Road Tri-Rail Station. From there, Modern Streetcar would continue to the Fort Lauderdale-Hollywood International Airport, connecting to the Wave in downtown Fort Lauderdale, and then extending along Broward Boulevard to the Tri-Rail Station, west of I-95.

A new storage and maintenance facility is required for the streetcar fleet needed to operate the alternatives under study. Based on run time estimates conducted by Jacobs, the streetcar facility needs to be able to initially store 11 vehicles and maintain 17 vehicles (including the Wave Downtown Corridor Streetcar project) to accommodate the maximum fleet needed at startup. In order to account for future expansion of the streetcar operation, a 40% increase in fleet size over time is assumed. Based on this assumption, the facility needs to be sized for storing 18 streetcars and for maintaining 24 streetcars.

A series of evaluation criteria were established for selecting potential storage and maintenance facility sites. After applying the evaluation criteria and comparing the candidate sites against each other, the most promising sites were identified. From this analysis, the Study team developed conceptual site plans

to graphically “test fit” the two best sites. Site screening and evaluation, as well as the conceptual site plans developed, are further described and depicted in this report.

## 1.0 Introduction

The Central Broward East-West Transit Study is being conducted by the Florida Department of Transportation (FDOT) and its partners; Broward County Transit (BCT), South Florida Regional Transportation Authority (SFRTA), and the Broward Metropolitan Planning Organization to develop a premium transit service in central Broward County.

Jacobs Engineering, the prime consultant in charge of managing the Central Broward East-West Transit Study, is analyzing alternatives for different modes of transportation throughout the Central Broward East-West corridor in South Florida. The primary goal of the Study is to work towards and determine a Locally Preferred Alternative (LPA).

As a sub-consultant to Jacobs Engineering, AECOM has the responsibility to find suitable location(s) for a storage and maintenance facility for Modern Streetcar technology as a part of this Transit Analysis. Site selection will help determine the LPA chosen.

Several criteria should be considered in the site selection process for a new storage and maintenance facility. The evaluation criteria to be analyzed include: size and configuration, roadway access, operational efficiency, land use compatibility, community impacts, natural environmental impacts, site topography, property acquisition costs, and publicly available land. A list of candidate properties that meet the basic evaluation criteria established has been generated. This list was further screened to create a list of the most promising candidates. From the final list, site plan concepts have been developed for the top two alternatives.

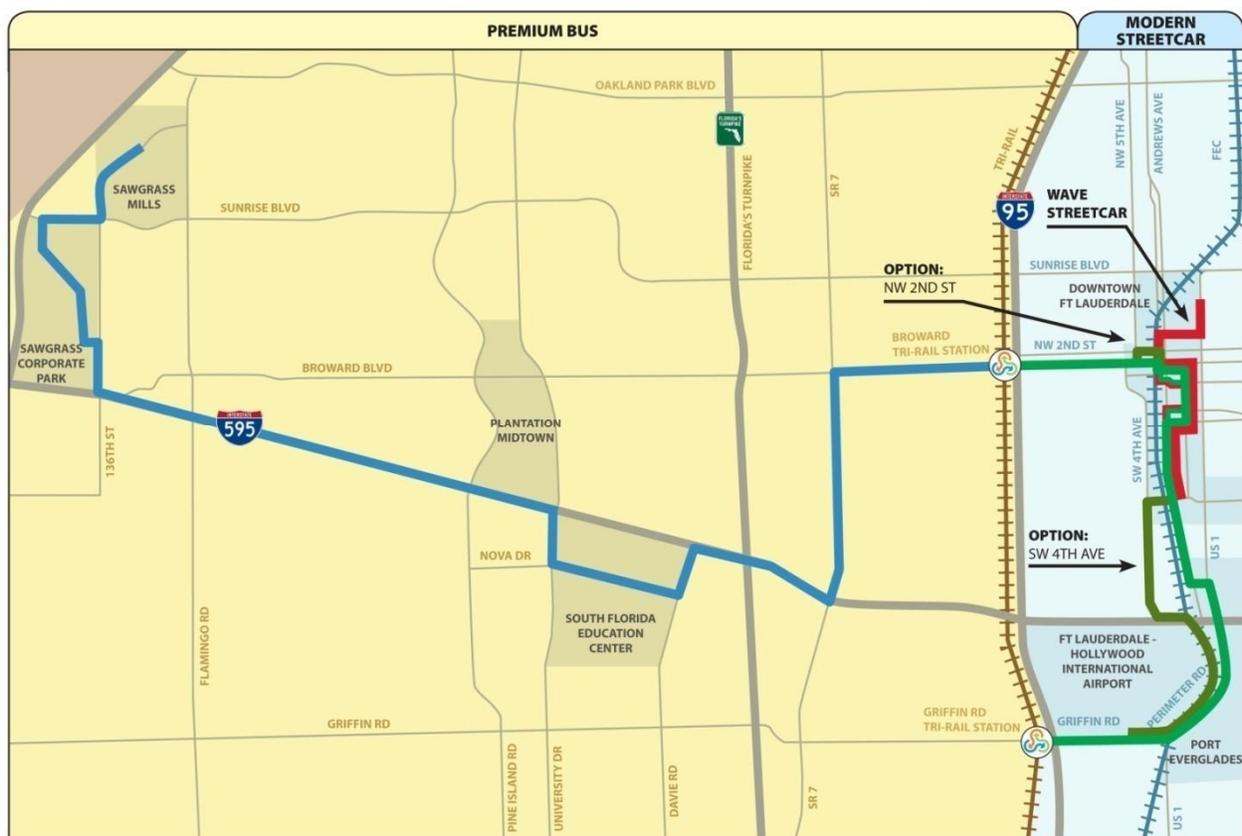
## 2.0 Direction and Assumptions

There are two main alternatives being considered in the Central Broward East-West Transit Study. These alternatives are:

- The SR 7/Broward Boulevard Alternative: This Alternative proposes Premium Bus from Sawgrass Mills to the Broward Boulevard Tri-Rail Station. The Modern Streetcar would continue service to downtown Fort Lauderdale, connecting with the Wave, the Fort Lauderdale-Hollywood International Airport, and at the Griffin Road Tri-Rail Station.
- The Griffin Road Alternatives: These Alternatives propose Premium Bus from Sawgrass Mills to the South Florida Educational Center (SFEC), then either Modern Streetcar or Premium Bus from the SFEC to the Griffin Road Tri-Rail Station. From there, Modern Streetcar would continue to the Fort Lauderdale-Hollywood International Airport, connecting to the Wave in downtown Fort Lauderdale, and then extending along Broward Boulevard to the Tri-Rail Station west of I-95.

Exhibits 1 and 2 illustrate these Alternatives.

### Exhibit 1: SR 7/Broward Boulevard Alternative



## Exhibit 2: Griffin Road Alternatives



A new storage and maintenance facility is required for the streetcar fleet needed to operate the alternatives under study. Based on run time estimates conducted by Jacobs, the streetcar facility needs to be able to initially store eleven (11) vehicles and maintain seventeen (17) vehicles (including the Wave Downtown Corridor Streetcar project) to accommodate the maximum fleet needed at startup. In order to account for future expansion of the streetcar operation, a 40% increase in fleet size over time is assumed. Based on this assumption, the facility needs to be sized for storing eighteen (18) streetcars and for maintaining twenty-four (24) streetcars.

A total fleet of either four (4), six (6), or eleven (11) streetcars would be needed for the two alternatives being studied, in addition to the six (6) car fleet for the Wave Operation. These vehicle requirements are broken down as follows:

- Four (4) vehicles are needed for the extension to the Broward Tri-Rail station only (east of I-95). This extension applies to both the SR 7/Broward Boulevard and Griffin Road alternatives.
- Six (6) vehicles are needed for the extensions to the Broward Tri-Rail station AND Griffin Tri-Rail station (east of I-95). This extension applies to both the SR 7/Broward Boulevard and Griffin Road Alternatives.
- Eleven (11) vehicles are needed for the extensions to the Broward Tri-Rail station and University/Nova (SFEC). This extension only applies to the Griffin Road Alternatives.

The planned Wave alignment is 2.7 miles long. The Wave team is proposing to operate five (5) to six (6) streetcars and provide for a maintenance facility for up to six (6) vehicles at Sistrunk and 3<sup>rd</sup> Avenue. The Wave team, currently looking into joint development ideas, is planning to conduct a Walkability and Pedestrian Study in the vicinity of the proposed Wave maintenance facility, and is getting partners on board for the project. The Wave team is also looking into the possibility of phasing the implementation of the 2.7-mile Wave, with the first phase extending from the proposed Maintenance and Storage Facility at Andrews Avenue and NE 4<sup>th</sup> Street to the Judicial Complex in the next three years, followed by the extension to Broward General Medical Center.

Because the Wave facility is being planned to be a “light” maintenance facility, the Central Broward Transit (CBT) Study needs to consider accommodating heavy maintenance for a fleet that includes the six (6) Wave vehicles. Light maintenance includes periodic streetcar inspections and performing corrective maintenance. Light maintenance generally takes less than eight (8) hours to complete. Heavy maintenance, on the other hand, generally takes more than eight (8) hours to perform. Heavy maintenance may include the replacement of streetcar trucks or other major components, extensive troubleshooting, and repairing defects which affect multiple streetcar systems.

There are some potential areas for synergy between the Wave facility being planned and the new streetcar storage and maintenance facility described in this report. Some of these maintenance functions include exterior washing, wheel truing, and body shop/painting. All of these functions are essential but can add major cost to a facility. These functions all have the potential to be shared. For the purposes of this Study, it is assumed that these functions as well as all other heavy maintenance functions will be located in the new streetcar storage and maintenance facility described in this report.

It was also noted during meetings with the Wave project sponsor that catenary-free vehicles are desired. The new storage and maintenance facility described in this report has been sized using the Bombardier Flexity Classic with a catenary-free design as the assumed streetcar. The Bombardier Flexity Classic has an approximate length of 70 feet, a width of 7.75 feet, and a minimum horizontal curve radius of 100 feet.

## 3.0 Functional Space Program

A functional space program was developed for a new streetcar storage and maintenance facility. The program defines the functional requirements for the facility. In this context, the functions refer to the activities that must be performed to support the overall operation of the streetcar system.

Programming is the process of clearly defining all of the activities to be performed and the people who will use the space. Accounting for functional and physical needs is a primary purpose of the space planning process that defines an owner's functional and physical requirements for each spatial element in a building or facility. The programming performed is intended to clearly delineate in-use requirements and relationships of occupant activities and spaces required for all supporting building systems and equipment. The functional space program is highly important as it serves as the baseline for the subsequent detailed space planning and all of the design process. It should be emphasized that the programming work performed to date is the Functional Space Program, which should be developed into a more elaborate Detailed Space Program if the Study progresses, and as information is gathered, detailed, clarified, and confirmed.

Some key components in developing an appropriate functional space program for a facility include:

- Understanding how the work processes support the mission and purpose of a facility
- Defining spatial requirements for occupant activities and equipment
- Understanding functional/adjacency relationships among the programmed spaces
- Accommodating building systems and equipment
- Considering serviceability (clearance) requirements

The result of the programming analysis performed for the Study revealed a total site requirement of 6.46 acres for a new streetcar storage and maintenance facility. The Functional Space Program was developed in conjunction with the direction and assumptions stated in Section 2. The complete Functional Space Program can be found in Appendix A.

## 4.0 Site Search and Evaluation Criteria

A set of evaluation criteria, intended to be minimum criteria or “yes/no” qualifiers, was established for selecting a “long list” of potential streetcar storage and maintenance facility sites for further evaluation and comparison. The minimum criteria used for screening potential streetcar facility locations are described in Appendix B. Geographic Information System (GIS) software was used for conducting the property screening. The screening yielded twenty (20) properties which met the minimum criteria. A property screening map titled “Potential Candidates”, which shows the “long list” of candidate sites based on the criteria and direction documented, can be found in Appendix C. Sites are numbered 1 through 20 on the map.

The “long list” of candidates was discussed in meetings with representatives from the SFRTA and Wave project team. The importance of acquisition time to the overall process was stressed as an important factor in locating a new storage and maintenance facility. Because private property takes much longer to acquire, it was suggested that publicly-owned property would be ideal if available. The most optimal location for a new storage and maintenance facility is dependent on the extent of the CBT alignment and site locations relative to it. A location that would reduce travel time and deadheading is optimal.

GIS software was again used to analyze the twenty (20) properties identified on the “long list” of candidates in greater detail. Upon further investigation, eight (8) of the properties were eliminated from further consideration. These properties are Sites 7, 8, 9, 10, 11, 12, 15, and 17. Sites 7, 8, 12, and 15 all fall within highway right-of-way. US 1 and its network of lanes and on and off ramps occupy portions, if not all, of these sites. Sites 9, 10 and 11 are vacant government properties; however, adequate yard lead access to these properties is greatly limited by US 1 and its network of lanes and ramps. Building a streetcar yard lead to these sites would require major road reconstruction work. Site 17 appeared as vacant industrial in the initial screening, but upon further evaluation is not actually vacant. Industrial storage tanks can be seen from the property screening map to occupy this site.

The twelve (12) remaining properties were considered to have no fatal flaws and warranted further consideration and screening. It should be noted that Sites 1, 2 and 3 are located in the vicinity of the SFEC. These candidate properties are only viable if the Griffin Road Modern Streetcar Alternative is selected as the LPA (and therefore Modern Streetcar technology is selected from the Griffin Road Tri-Rail Station to the SFEC). The viability of these candidates also hinges on whether or not the portion of the streetcar line from the Griffin Road Tri-Rail Station to the SFEC will be constructed in the initial staging of the operation. If not, then these candidates should be eliminated from consideration because the heavy maintenance facility is needed for the CBT operation at startup. Also to be noted is that Sites 14, 18 and 19 can only be considered as a cluster. These three (3) sites are less than the minimum size requirement of 5 acres described in the first set of evaluation criteria.

Ten (10) candidate sites were identified for further evaluation. Two (2) of the candidate sites were formed by clustering smaller properties together. Properties 14 and 16 were clustered together to form Site I (Federal/32<sup>nd</sup>) and properties 18 and 19 were clustered together to form Site E (Taylor/7<sup>th</sup> West). The ten (10) candidate sites were labeled A through J, and can be seen on the map titled “Potential Properties” in Appendix C.

The Study team further evaluated and made comparisons between the remaining sites using a second set of criteria. The second set of criteria used for further evaluation and comparison is:

- Size and Configuration (Operations)
- Roadway and Rail Access
- Operational Efficiency
- Land Use Compatibility
- Community Impacts
- Natural Environmental Impacts
- Site Topography
- Property Acquisition Costs
- Publicly Available Land

This second set of criteria is also detailed in Appendix B. Individual property maps showing greater detail for each of the ten (10) remaining sites, with associated information including the candidates' name, owner, property dimensions, zoning, etc., are provided in Appendix C. Properties that are near or adjacent to each other appear together on one map.

A numeric score was developed to quantify how well a site meets specific criteria. Each criterion was then weighed to reflect its relative importance (in collaboration with the Wave project team). After applying the second set of criteria against the candidate sites, they were compared against each other using an evaluation table. Appendix D includes the evaluation table and key property data for each site.

The most promising sites, I and J, are those with the highest weighted score. Conceptual site plans prepared to graphically "test fit" these locations are described in Section 5.

## 5.0 Conceptual Site Plans

The following desirable design features were considered:

- The storage yard should have a non-revenue vehicle storage track. This track can be initially used to facilitate delivery of streetcars from road hauled trailer trucks. This track could be utilized for loading flat cars, ballast cars, and other equipment required for future line maintenance.
- A run-around track bypassing the storage tracks and the maintenance facility shop tracks should be provided. The run-around track will be part of the loop track which eliminates reverse moves, provides the ability to turn individual streetcars around in the yard, and enables streetcars to get to the opposite side of the maintenance building.
- Primary and secondary access from the mainline track(s) to the yard should be provided. The primary access will provide the main route for streetcar dispatching and receiving. The secondary access will provide an additional route to allow streetcars to enter and exit the yard should there be a condition that renders the primary access unavailable. The secondary access will also increase the efficiency of the yard during heavy traffic periods by providing an additional route for streetcar dispatching and receiving. Primary and secondary access to the yard will be provided from one of the mainline tracks only. Crossovers to the other mainline track in the direction of travel will be required to ensure yard access from both mainline tracks.
- Sufficient tracks should be provided for storing all streetcars that will be assigned to the facility, including an allowance for growth.
- Storage tracks which are double-ended to provide operational flexibility and reduce non-revenue movements.
- A lead track with direct access from the mainline tracks to the vehicle wash bay. A track bypassing the vehicle wash connecting the mainline and storage tracks should also be accommodated.
- Shop tracks should be accessible from either end.
- Adequate streetcar repair and inspection spots should be provided for the planned fleet size. The site must allow flexibility to enlarge the shop in proportion to a larger fleet if it is required.
- The minimum length of a storage track should be based on the length of one streetcar plus a 6.5 foot gap allowance between vehicles.
- Alternating track spacing of 18 feet will allow for paved aisles for light poles, passage of carts for servicing and cleaning, and 12 feet for passage by a person only (to be confirmed with dynamic envelope of vehicle when available).
- Segregated highway vehicle parking should be provided that accommodates all shop staff and visitors during peak usage. Spaces for maintenance service vehicles kept on site should be accommodated as well.

Track:

- Desirable minimum horizontal curve radius: 100 feet
- Allowable minimum horizontal curve radius: 82 feet<sup>1</sup>
- Use No. 4 turnouts in the yard (minimum)

The conceptual site plans prepared are a “test fit” and should not be construed as a more advanced stage of engineering. A preliminary site plan, profiles, stormwater management, and wetland mitigation all require further analysis and development in a later preliminary engineering phase.

Conceptual site plans are included in Appendix E and are described below for the top two ranked sites, I and J.

## 5.1 Site I: US 1/32<sup>nd</sup> Street

### *Location/Rail Access/Streetcar Storage:*

Site I is located in the vicinity of US 1 and SE 32<sup>nd</sup> Street. Streetcar access is provided by at-grade lead tracks which enter/exit the yard north to the signalized intersection at SE 30<sup>th</sup> Street. Upon entering the site, streetcars can pass through the vehicle wash on their way to storage. The storage tracks are all double-ended, and have a capacity to hold 16 streetcars (4 streetcars per track). Ten foot (10') wide work platforms are staggered between storage tracks for interior cleaning and sanding functions. A tail track is included at the south end of the site for giving streetcars another way for accessing the yard leads and returning to service, and entering/exiting the shop.

### *Shop/Highway Access/Stormwater:*

The shop building, wash, and parking areas were sized based on the Streetcar Functional Space Program (Appendix A). The most frequently used shop tracks with the highest turnover rates (the Light Maintenance/Inspection Track, Heavy Maintenance and Repairs Track, and the Wheel Truing Track) are all double-ended. A stub-ended Body Shop/Paint Booth Track and Non-Revenue Maintenance Track are also included in the shop. Highway vehicle access can be provided by constructing a roadway north from Eller Drive. This roadway shall provide access for shop staff and deliveries. An existing dirt/gravel road is already in place. Aboveground stormwater retention can be accommodated on site.

### *Trackwork:*

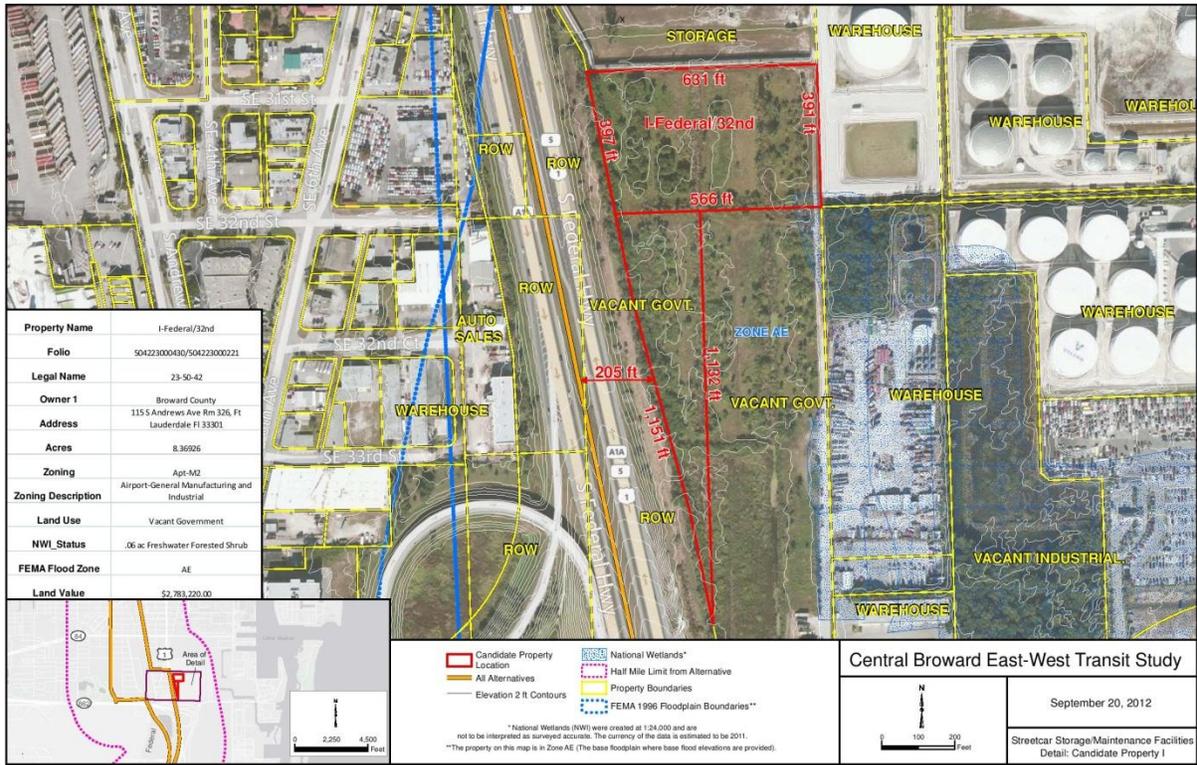
No. 4 turnouts are used within the yard. A minimum horizontal curve radius of 100 feet was maintained throughout most of the yard, except in a few instances where a 95 foot radius was used due to site constraints. A level or graded site was assumed. A more detailed engineering analysis should be performed to confirm the track geometry against site elevations.

A detailed Property Map for Site I can be found in Exhibit 3 on the following page.

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<sup>1</sup> The actual minimum radius requirements allowed will be developed later on in a preliminary engineering phase and in working with the streetcar manufacturer.

Exhibit 3: Site I (Federal/32<sup>nd</sup>)



## 5.2 Site J: US 1/Taylor Road

### *Location/Rail Access/Streetcar Storage:*

Site J is located in the vicinity of US 1 and Taylor Road. Streetcars can access the site via an at-grade yard lead from Taylor Road. The alignment at Griffin Road and US 1 can be extended along Taylor Road for accessing the site. The yard lead at Taylor Road, as well as street access, will require right-of-way and vacant government property acquisition. Upon entering the site, streetcars can access the vehicle wash on their way to storage. Streetcar storage consists of two double-ended and two stub-ended tracks, and has a capacity to hold 16 streetcars (4 streetcars per track). Ten foot (10') wide work platforms are staggered between storage tracks for interior cleaning and sanding functions. A loop or runaround track is included around the perimeter of the site for providing better flexibility and more efficient streetcar movements when accessing the yard lead and returning to service, and entering/exiting the shop.

### *Shop/Highway Access/Stormwater:*

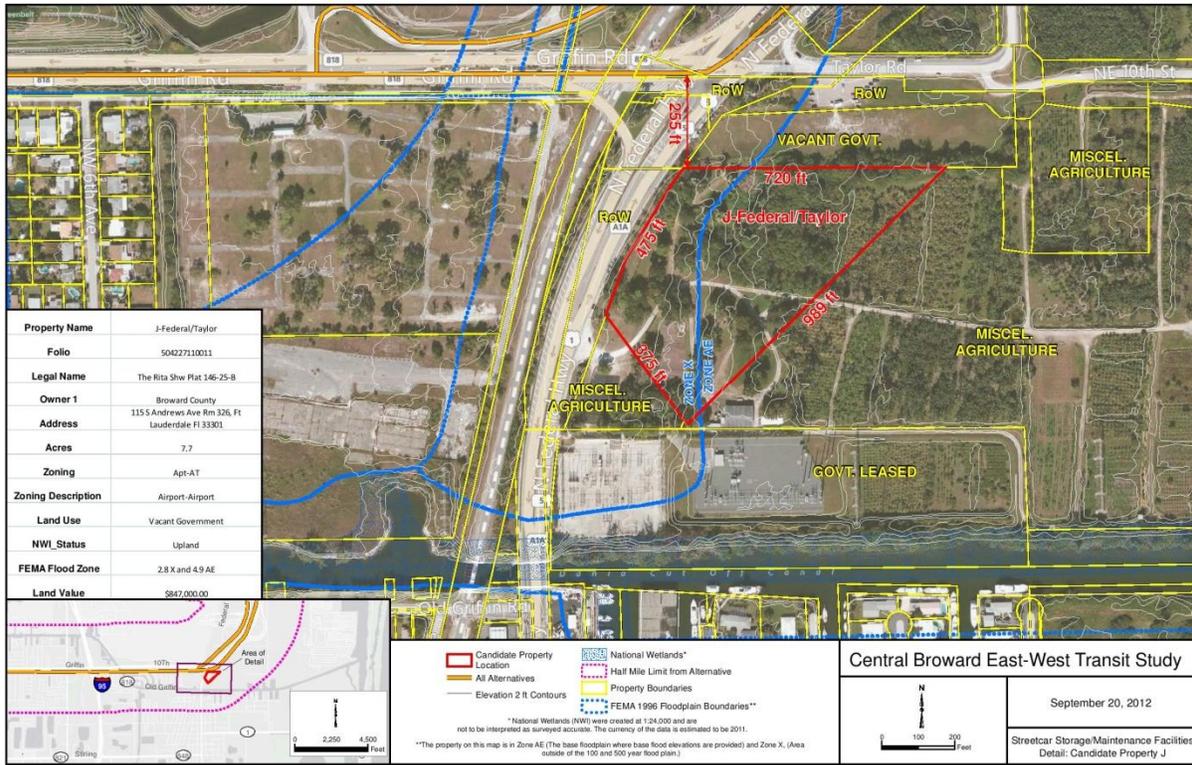
The shop building, wash, and parking areas were sized based on the Streetcar Functional Space Program (Appendix A). The most frequently used shop tracks with the highest turnover rates (the Light Maintenance/Inspection Track and the Heavy Maintenance and Repairs Track) are both double-ended. A stub-ended Wheel Truing Track, Body Shop/Paint Booth Track, and Non-Revenue Maintenance Track are also included in the shop. Highway vehicle access can be provided by constructing a roadway south from Taylor Road. This roadway shall provide access for shop staff and deliveries. Right-of-way and vacant government property acquisition would be required for roadway construction. Aboveground stormwater retention can be accommodated on site.

### *Trackwork:*

No. 4 turnouts are used within the yard. A minimum horizontal curve radius of 100 feet was maintained throughout the site. A level or graded site was assumed. A more detailed engineering analysis should be performed to confirm the track geometry against site elevations.

A detailed Property Map for Site J can be found in Exhibit 4 on the following page.

Exhibit 4: Site J (Taylor/7<sup>th</sup> West)



## 6.0 Preliminary Capital Cost Estimates

Preliminary Capital Cost Estimates for Sites I and J were prepared based on the conceptual site plan developed for each property. The cost estimates include all construction, professional services, and contingency costs. Also, the cost estimates include the taxable land values for Sites I and J, which were assumed to be the appraised or listed values of the properties for estimating purposes. The cost of the rail access to the facilities is not included in the cost estimate. The distance and associated cost will vary depending on the alternative selected. The rail access will be reviewed in more detail during the next project development phase.

Some assumptions were made regarding the construction materials and finishes for the Streetcar Maintenance and Administration Building appearing at both sites. These assumptions were based upon materials used for a similar operating train facility in Minneapolis, as well as a bus maintenance and administration facility in Fort Myers, Florida, which is currently being bid (2012). A complete description of the construction materials and finishes assumed can be found in Appendix F.

The cost estimates revealed a grand total for constructing a new storage and maintenance facility of approximately \$49.7 million for Site I and \$46.9 million for Site J. Estimates were prepared using current dollars (2012) and an escalation factor of 3% annually based on the mid-point of construction. The complete Preliminary Capital Cost Estimates for both sites can be found in Appendix F.

## 7.0 Conclusion

In conclusion, the Study team developed the size and footprint required for a storage and maintenance facility to operate the Griffin Road Modern Streetcar Alternative, and established evaluation criteria for finding and narrowing down potential properties for locating such a facility. This study revealed ten (10) viable candidate sites which were further evaluated and scored. Two sites appeared as the most promising based on the evaluation factors analyzed. Both of these top candidates, Site I (US 1/32<sup>nd</sup> Street) and Site J (US 1/Taylor Road), were graphically "test fit" and appear to provide very functional site layouts. The Study team recommends that either one of these sites be further analyzed and advanced for project development.

**Appendix A: Functional Space Program  
(For Streetcar Operation)**

## Central Broward East-West Transit Study

### Storage and Maintenance Facility Location Study

#### Functional Space Program (For Streetcar Operation) - SUMMARY

Space Description	Total Recommended Sq. Ft.	Notes
<b>TOTAL SITE AREAS</b>	<b>4,405</b>	<b>Exterior support spaces and site security.</b>
<b>TOTAL STREETCAR STORAGE W/ CIRCULATION</b>	<b>23,040</b>	<b>Storage of Streetcar fleet.</b>
<b>TOTAL HIGHWAY VEHICLE PARKING W/ CIRCULATION</b>	<b>22,484</b>	<b>Employee, Visitor, and Agency vehicle parking.</b>
<b>TOTAL VEHICLE SERVICING W/ CIRCULATION</b>	<b>3,675</b>	<b>Streetcar Servicing functions (includes adding traction sand, and streetcar interior and exterior cleaning).</b>
<b>TOTAL STREETCAR MAINTENANCE AREAS W/ CIRCULATION</b>	<b>25,800</b>	<b>Streetcar Maintenance Areas (Light Maintenance/Inspection, Heavy Maintenance and Repairs, etc.)</b>
<b>TOTAL SHOP SUPPORT AREAS W/ CIRCULATION</b>	<b>9,000</b>	<b>Shop Support Areas (including Truck Shop, HVAC Shop, Brake Shop, Parts Storage, etc.)</b>
<b>TOTAL ANCILLARY AREAS W/ CIRCULATION</b>	<b>8,427</b>	<b>Office and Employee Support Areas and Building Support Spaces.</b>
<b>TOTAL NON-REVENUE MAINTENANCE AREAS W/ CIRCULATION</b>	<b>3,067</b>	<b>Non-Revenue Maintenance Areas.</b>
<b>SITE DEVELOPMENT - BUILDING FOOTPRINTS</b>		
Total Vehicle Parking	22,484	See Detailed Program for parking breakdown.

## Central Broward East-West Transit Study

### Storage and Maintenance Facility Location Study

#### Functional Space Program (For Streetcar Operation) - SUMMARY

Space Description	Total Recommended Sq. Ft.	Notes
Total Servicing Building Size w/ Circulation	3,675	See Detailed Program for breakdown of spaces and functions.
Total Maintenance Building Size w/ Circulation	46,294	See Detailed Program for breakdown of spaces and functions.
Total LRV Storage Building	23,040	See Detailed Program for storage breakdown.
<b>TOTAL BUILDINGS</b>	<b>73,009</b>	
<b>TOTAL SITE REQUIREMENTS</b>		
YARD & SHOP LADDERS	<b>87,611</b>	Assumes double-ended storage and shop tracks. A factor (120%) is applied against Sq. Ft. of the buildings.
<b>Sub-total, Site</b>	<b>187,509</b>	<b>Total Buildings + Parking + Site Areas + Ladder Tracks</b>
Factor for site circulation, SWM, setbacks and landscaping	<b>93,754</b>	50% factor applied
<b>TOTAL SITE REQUIREMENTS (Sq. Ft.)</b>	<b>281,263</b>	
<b>TOTAL SITE REQUIREMENTS (ACRES)</b>	<b>6.46</b>	

Assumptions:

- 1) Based on run time estimates, the streetcar facility needs to be able to store 11 vehicles and maintain 17 vehicles (including the Wave) as a worst case scenario. This would accommodate the maximum fleet needed at startup. In order to account for future expansion of the streetcar operation, a 40% increase in fleet size over time is assumed. Based on this assumption the facility needs to be sized for storing 18 streetcars and for maintaining 24 streetcars.
- 2) No vehicles have been selected or specified at this point, however it was noted in meetings that the Wave operation desires to be catenary free. Based on this, the storage and maintenance facility has been sized using the Bombardier Flexity Classic with a catenary free design as the assumed streetcar. The Bombardier Flexity Classic has an approximate length of 70 ft, a width of 7.75 ft, and a minimum horizontal curve radius of 100 ft.
- 3) A 5 to 7 acre site is required to accommodate the maximum fleet size assumed accounting for future expansion.
- 4) It's being assumed that only light maintenance/inspection activities will be performed at the downtown Wave facility. All heavy maintenance and repair functions will occur at this facility.
- 5) Assume 3 employees per streetcar. So a 24 car fleet would require approximately 75 employees (3 x 24 = 72; roundup to 75).
- 6) Assume shop staff is 90% male employees and 10% female employees (67 males and 8 females for a 75 person staff).
- 7) Assume that 75% of the staff is occupying the facility at its peak usage (0.75 x 75 = 56.25; roundup to 57).
- 8) Only areas that would affect the building/site footprints are analyzed for this study. Areas are sized using typical industry standards.

# Central Broward East-West Transit Study

## Storage and Maintenance Facility Location Study

### Functional Space Program (For Streetcar Operation) - DETAILED PROGRAM

Space Description	Quantity (Spaces or Occupants)	Recommended Sq. Ft. (Per Space)	Total Recommended Sq. Ft.	Notes
<b>SITE FEATURES</b>				
Traction Power Substation	1	800	800	This is an exterior support space located within the yard. This area is for locating the Traction Power Substation.
Outdoor Material Storage	1	1000	1,000	This is an exterior support space located within the yard. This area is for the outdoor storage of RoW maintenance materials including systems, track, traction power, and facilities storage.
Waste Handling/Recycling	1	600	600	This is an exterior support space located within the yard. It will be an area for housing the trash compactor, scrap metal bin(s), and recycling.
Hazardous Materials Shed	1	300	300	Space for hazardous materials or waste awaiting pickup.
<b>TOTAL SITE FEATURES</b>			<b>2,700</b>	
<b>FUELING FACILITY</b>				
Fueling Island - Berth	1	1250	1,250	Dedicated canopy covered area for fueling diesel rail-bound equipment and diesel highway vehicles.
Fueling Island - Tank	1	250	250	Above ground storage tank for containing diesel fuel.
Fueling Island - DEF Storage	1	150	150	Diesel Exhaust Fluid (DEF) storage. Temperature control is required.
<b>TOTAL FUELING FACILITY</b>			<b>1,650</b>	
<b>SITE SECURITY</b>				
Security Guard Shack	1	55	55	This area is for locating the Security Guard Shack. The Security Guard Shack shall be located at the main entrance to the yard.
<b>TOTAL SITE SECURITY</b>			<b>55</b>	
<b>TOTAL SITE AREAS</b>			<b>4,405</b>	<b>This is the sum of Site Features, Fueling Facility, and Site Security above.</b>
<b>STREETCAR STORAGE</b>				
Storage Spots	18	1280	23,040	Storage spots are 16 ft wide x 80 ft long. This allows for 10 ft work platforms to be provided in between every other storage track, and then 6 ft aisles in between the other storage tracks. It also allows for room in between cars for uncoupling, cab viewing angles, space for pedestrian passage, etc. An eventual fleet storage capacity of 18 streetcars is being assumed.
<b>TOTAL STREETCAR STORAGE</b>			<b>23,040</b>	
Circulation Factor	0%			Cross circulation is included in the storage spot size.

## Central Broward East-West Transit Study

### Storage and Maintenance Facility Location Study

#### Functional Space Program (For Streetcar Operation) - DETAILED PROGRAM

Space Description	Quantity (Spaces or Occupants)	Recommended Sq. Ft. (Per Space)	Total Recommended Sq. Ft.	Notes
<b>TOTAL STREETCAR STORAGE W/ CIRCULATION</b>			<b>23,040</b>	
<b>HIGHWAY VEHICLE PARKING</b>				
Employee Parking	57	153	8,721	Parking stalls are 8.5' x 18'.
Visitor Parking	5	153	765	Parking stalls are 8.5' x 18'.
ADA Parking	3	2 @ 234 1 @ 288	756	Includes 2 standard ADA parking spaces (13' x 18') and 1 van accessible parking space (16'x18').
Maintenance Service Vehicles	5	200	1,000	Parking stalls are 10' x 20'.
<b>TOTAL HIGHWAY VEHICLE PARKING</b>			<b>11,242</b>	
Circulation Factor	x 2			
<b>TOTAL HIGHWAY VEHICLE PARKING W/ CIRCULATION</b>			<b>22,484</b>	
<b>STREETCAR SERVICING</b>				<b>Servicing occurs daily and includes streetcar interior and exterior cleaning, adding traction sand, and safety inspections by operators. Scheduled intensive cleaning and safety inspections also may occur.</b>
Daily Safety Inspection	0	0	0	This is the operator safety inspection before entering service. This function will occur within the yard and will not require any building space.
Scheduled Safety Inspection	0	0	0	This function will occur on a pit inspection track in the Light Maintenance area within the facility. The number of inspection pit spots and the space required for them are calculated below under Light Maintenance/Inspection.
Daily Interior Cleaning	0	0	0	This function will occur on the work platforms provided in between the streetcar storage tracks. Space for these work platforms has been considered in the streetcar storage spots calculated above.
Heavy Interior Cleaning	0	0	0	Assuming that heavy cleaning will be done on storage tracks when most cars are in service.
Sanding	0	0	0	Assuming that this function will occur on the work platforms provided in between the streetcar storage tracks. Utility carts can access work platforms for transporting bags of traction sand to streetcars. Space for these work platforms has been considered in the streetcar storage spots calculated above.

## Central Broward East-West Transit Study

### Storage and Maintenance Facility Location Study

#### Functional Space Program (For Streetcar Operation) - DETAILED PROGRAM

Space Description	Quantity (Spaces or Occupants)	Recommended Sq. Ft. (Per Space)	Total Recommended Sq. Ft.	Notes
Washing (Car Wash)	1	3675	3,675	This would be a 105 ft long x 35 ft wide building. The car wash would preferably be of a drive-through design if track geometry allows. The Car Wash should include a water reclamation system and allow for drainage in the direction of travel. The Car Wash should be on a dedicated track adjacent to a yard lead so that streetcars can be washed upon entering the yard. The wash function should occur prior to streetcars being stored.
<b>TOTAL VEHICLE SERVICING</b>			<b>3,675</b>	
Circulation Factor	0%			Circulation is included.
<b>TOTAL VEHICLE SERVICING W/ CIRCULATION</b>			<b>3,675</b>	
<b>STREETCAR MAINTENANCE AREAS</b>				
Light Maintenance/Inspection	2	2160	4,320	Spots are 24 ft wide x 90 ft long. This allows for forklift access and accommodates pit areas. Elevated roof-level platforms at the Light Maintenance/Inspection track may also be needed if streetcars are of a low-floor design. Elevated roof-level platforms would be 16.75 ft wide and 180 ft long. Both Light Maintenance/Inspection spots will occur on 1 track. Typically, 1 repair spot (includes light and heavy maintenance) is provided for every 6 streetcars.
Heavy Maintenance and Repairs	2	2430	4,860	Spots are 27 ft wide x 90 ft long. This allows for forklift access and accommodates space for either in-ground hoists or portable jacks, as well as truck turntables. Both Heavy Maintenance and Repair spots will occur on 1 track. Typically, 1 repair spot (includes light and heavy maintenance) is provided for every 6 streetcars.
Wheel Truing	1	4860	4,860	This spot, which will be located on a dedicated track, is 27 ft wide x 180 ft long, which takes into account space on both sides of the wheel lathe machine for movement through the lathe for cutting and body height adjustment and forklift truck movements/circulation, as well as accommodates the wheel truing pit.
Body Shop	1	3300	3,300	This berth is 30 ft wide x 110 ft long. This accommodates for the potential use of portable jacks, as well as any sanding, grinding, or welding operations that will take place in this area.

# Central Broward East-West Transit Study

## Storage and Maintenance Facility Location Study

### Functional Space Program (For Streetcar Operation) - DETAILED PROGRAM

Space Description	Quantity (Spaces or Occupants)	Recommended Sq. Ft. (Per Space)	Total Recommended Sq. Ft.	Notes
Paint Booth	1	3300	3,300	This berth is 30 ft wide x 110 ft long. This allows for manlift access all around the streetcar for exterior painting, and the fabricated booth structure.
<b>TOTAL STREETCAR MAINTENANCE AREAS</b>			<b>20,640</b>	
Circulation Factor	20%			
<b>TOTAL STREETCAR MAINTENANCE AREAS W/ CIRCULATION</b>			<b>25,800</b>	<b>Circulation would not be applied to elevated roof-level platforms, if required.</b>
<b>SHOP SUPPORT AREAS</b>				
Truck Shop	1	1500	1,500	This area is for the storing and repair of trucks and wheel assemblies. Equipment includes truck press, wheel press, tire cutting machine, etc.
Truck Cleaning Area	1	400	400	Enclosed area for cleaning trucks and components before entry into shop areas. This area accomodates the high pressure washer.
HVAC Shop	1	400	400	This area supports the reconditioning and repair of streetcar AC units.
Brake Shop	1	400	400	This area supports the equipment and activities associated with the repair of streetcar braking systems.
Traction Control Test Shop	1	400	400	The Traction Control Test Shop shall support the equipment and activities associated with maintaining traction control and auxillary power units.
Machine/Sheet Metal Shop	1	800	800	This area supports the equipment and activities related to general machining and metal work.
Welding Shop	1	250	250	This is a closed shop or workstation for welding and fabrication.
Parts Storage Room	1	2000	2,000	Storage functions include shipping/receiving, warranty recovery, parts issuing, warehousing, and component storage. Large components, such as trucks and wheelsets (Truck Shop), will be stored in their respective shop areas. Additional storage can be provided on a second story from that provided on the main floor.
Hazardous Materials Storage	1	300	300	This is a controlled storage area for waste materials considered hazardous by code.
Tool Crib	1	100	100	This area is for the storage of controlled use tools and equipment, and should be located near the Parts Storage Room.
Tool Box Storage	1	100	100	This is a dedicated area for the storage of technician tool boxes, if not allowed to be left in or near their assigned work area.

## Central Broward East-West Transit Study

### Storage and Maintenance Facility Location Study

#### Functional Space Program (For Streetcar Operation) - DETAILED PROGRAM

Space Description	Quantity (Spaces or Occupants)	Recommended Sq. Ft. (Per Space)	Total Recommended Sq. Ft.	Notes
Miscellaneous Equipment Storage	1	100	100	This is a dedicated area for the storage of portable shop equipment, including mobile lifting jacks and mobile access ladders.
<b>TOTAL SHOP SUPPORT AREAS</b>			<b>6,750</b>	<b>If the streetcar selected uses an overhead contact system then a Pantograph Shop will be needed. Shop Support Areas such as the Electronics Shop, and other areas where electronic bench repair occurs, may be located on a 2nd story.</b>
Circulation Factor	25%			
<b>TOTAL SHOP SUPPORT AREAS W/ CIRCULATION</b>			<b>9,000</b>	
<b>Ancillary Areas</b>				
<i>Office and Employee Support Areas</i>				
Entrance/Lobby	1	120	120	
Vertical Circulation (Elevator/Stairs)	1	300	300	
Offices	4	150	600	Maintenance Supervisor, MoW Supervisor, Parts Storage Supervisor, and Security Office.
Open Work Areas (Cubicles)	1	60	60	Parts Storage Clerk
Office/File Storage	1	150	150	
Conference Room	1	350	350	
Break/Lunch Room	1	900	900	Assumes seating for 60. Includes vending, kitchen area, etc.
Lockers/Washrooms	2	1 @ 1200 1 @ 250	1,450	Male: Assumes 3 toilets, 2 urinals, 5 laboratories, and 2 showers. 70 lockers.  Female: Assumes 1 toilet, 1 laboratory, and 1 shower. 10 lockers.
Uniform Storage	1	150	150	
Training Room	1	350	350	
First Aid Room	1	120	120	
<i>Building Support Spaces</i>				
Mechanical Equipment Room	1	650	650	
Electrical Equipment Room	1	650	650	
Computer/Communications Equipment Room	1	350	350	
Janitor Rooms	2	60	120	

## Central Broward East-West Transit Study

### Storage and Maintenance Facility Location Study

#### Functional Space Program (For Streetcar Operation) - DETAILED PROGRAM

Space Description	Quantity (Spaces or Occupants)	Recommended Sq. Ft. (Per Space)	Total Recommended Sq. Ft.	Notes
<b>TOTAL ANCILLARY AREAS</b>			<b>6,320</b>	<b>All other office areas and support spaces can be located on a 2nd story.</b>
Circulation Factor	25%			
<b>TOTAL ANCILLARY AREAS W/ CIRCULATION</b>			<b>8,427</b>	
<b>NON-REVENUE MAINTENANCE AREAS</b>				
Non-Revenue Rail-Borne Vehicle Bays	2	1000	2,000	Vehicle types expected to be maintained in these bays include tampers, a ballast regulator, etc. A MoW track will be provided in order to accommodate this function.
Non-Revenue Highway Vehicle Bays	2	600	1,200	Vehicle types expected to be maintained in these bays include pickup trucks, vans, SUVs, hi-rail trucks, etc.
Non-Revenue Muster Area	1	200	200	Area for computer stations.
Non-Revenue General Repair Area	1	1000	1,000	Equipment in this area includes band saw, cut-off saw, arbor press, drill press, blast cabinet, horizontal/vertical mill, tool grinder, pipe threading and bending equipment, etc.
Non-Revenue Storage Area	1	1000	1,000	Secured area which will house all of the components and material necessary to support all of the functions of the non-revenue maintenance departments. Additional storage can be provided on a second story from that provided on the main floor.
Traction Power Department - Traction Power Shop Area	1	400	400	Area for workbenches, shop equipment, etc.
Systems Department - Shop Area	1	200	200	Testing area for signal equipment.
Mow Department - Shop Area	1	500	500	Typical MoW shop equipment includes a self propelled work platform, portable lift table, hydraulic press, grinder, parts washer, drill press, and a workbench.
Facilities Maintenance Department - Shop Area	1	200	200	Dedicated workbench area with cabinets and shelves.
Fare Equipment - Testing	1	400	400	
Fare Equipment - Vault	1	400	400	
Fare Equipment - Storage	1	200	200	
<b>TOTAL NON-REVENUE MAINTENANCE AREAS</b>			<b>2,300</b>	
Circulation Factor	25%			

# Central Broward East-West Transit Study

## Storage and Maintenance Facility Location Study

### Functional Space Program (For Streetcar Operation) - DETAILED PROGRAM

Space Description	Quantity (Spaces or Occupants)	Recommended Sq. Ft. (Per Space)	Total Recommended Sq. Ft.	Notes
<b>TOTAL NON-REVENUE MAINTENANCE AREAS W/ CIRCULATION</b>			<b>3,067</b>	
<b>SITE DEVELOPMENT - BUILDING FOOTPRINTS</b>				
Total Vehicle Parking			22,484	See details above.
Total Servicing Building Size w/ Circulation			3,675	See details above.
Total Maintenance Building Size w/ Circulation			46,294	See details above.
Total LRV Storage Building			23,040	See details above.
<b>TOTAL BUILDINGS</b>			<b>73,009</b>	
<b>TOTAL SITE REQUIREMENTS</b>				
YARD & SHOP LADDERS	120%		<b>87,611</b>	Assumes double-ended storage and shop tracks. Factor is applied against Sq. Ft. of the buildings.
<b>Sub-total, Site</b>			<b>187,509</b>	
Factor for site circulation, SWM, setbacks and landscaping	50%		<b>93,754</b>	
<b>TOTAL SITE REQUIREMENTS (Sq. Ft.)</b>			<b>281,263</b>	
<b>TOTAL SITE REQUIREMENTS (ACRES)</b>			<b>6.46</b>	

## Central Broward East-West Transit Study

### Storage and Maintenance Facility Location Study

#### **Functional Space Program (For Streetcar Operation) - DETAILED PROGRAM**

##### Assumptions:

- 1) Based on run time estimates, the streetcar facility needs to be able to store 11 vehicles and maintain 17 vehicles (including the Wave) as a worst case scenario. This would accommodate the maximum fleet needed at startup. In order to account for future expansion of the streetcar operation, a 40% increase in fleet size over time is assumed. Based on this assumption the facility needs to be sized for storing 18 streetcars and for maintaining 24 streetcars.
- 2) No vehicles have been selected or specified at this point, however it was noted in meetings that the Wave operation desires to be catenary free. Based on this, the storage and maintenance facility has been sized using the Bombardier Flexity Classic with a catenary free design as the assumed streetcar. The Bombardier Flexity Classic has an approximate length of 70 ft, a width of 7.75 ft, and a minimum horizontal curve radius of 100 ft.
- 3) A 5 to 7 acre site is required to accommodate the maximum fleet size assumed accounting for future expansion.
- 4) It's being assumed that only light maintenance/inspection activities will be performed at the downtown Wave facility. All heavy maintenance and repair functions will occur at this facility.
- 5) Assume 3 employees per streetcar. So a 24 car fleet would require approximately 75 employees ( $3 \times 24 = 72$ ; roundup to 75).
- 6) Assume shop staff is 90% male employees and 10% female employees (67 males and 8 females for a 75 person staff).
- 7) Assume that 75% of the staff is occupying the facility at its peak usage ( $0.75 \times 75 = 56.25$ ; roundup to 57).
- 8) Only areas that would affect the building/site footprints are analyzed for this study. Areas are sized using typical industry standards.

**Appendix B: Evaluation Criteria -  
Streetcar Storage and Maintenance  
Facility Location**

# Central Broward East-West Transit Study

## Storage and Maintenance Facility Location Study

### Evaluation Criteria - Streetcar

This document describes the evaluation criteria used for selecting potential streetcar storage and maintenance facility sites for analysis as part of the Central Broward East-West Transit (CBT) Study. The first set of criteria are intended to be minimum criteria, or “yes/no” qualifiers, to be used to select a “long list” of candidate sites for further evaluation and comparison. The minimum criteria used for screening potential streetcar facility locations are:

- Potential sites should be 5 to 7 acres in size. This 5 to 7 acre site requirement is supported by the Functional Space Program developed for the CBT Study.
- Potential sites should be located along the alignment from a point near the western terminal of University Drive/Nova Drive east to 17<sup>th</sup> Street at the southern terminus of the downtown Wave and north of the Fort Lauderdale/Hollywood International Airport. Other parcels may be identified in the vicinity north of the airport proximate to the 4<sup>th</sup> Avenue alignment option. The South Florida Education Center (SFEC) area may also be selected for study if the other minimum criteria are met.
- Potential sites should be within ½ mile of the alignment, and preferably adjacent to it.
- Potential sites should have compatible zoning (Industrial/Light Industrial). Vacant industrial and government properties are considered, as well as multiple vacant parcels under common ownership that could add up to a 5 to 7 acre site.
- Eliminate properties abutting residential areas. Properties should only abut residential areas on one side.
- In addition, properties larger than the 7 acre upper limit are considered. If a property larger than 7 acres meets the other criteria above, a portion of it could be used.
- Any additional available properties known by the project team but not registering in the current GIS land use database have been included. [Note: A potential option exists and has been included at the Broward County property located east of U.S. 1 and north of Eller Drive parallel with I-595.]

From the “long list” of candidate sites established by applying the minimum criteria stated above, the project team further evaluated and made comparisons between them using the following criteria:

- *Size and Configuration.* Potential sites should have a size and shape/configuration that is conducive to meeting the streetcar operational requirements. A longer, more rectangular site shape is ideal, as well as a site that is parallel to the alignment with minimal changes in vertical grade.
- *Roadway Access.* Proximity of the site to the alignment and roads. Good roadway access is required for accepting the delivery of streetcars and receiving access for maintenance equipment and supplies, as well as ongoing access for operations crew and personnel.
- *Operational Efficiency.* A site that is ideally located with regards to proximity to the downtown Wave facility, as well as other transit facilities, can help reduce dead-heading, travel times, and incident recovery.
- *Land Use Compatibility.* Identify if re-zoning might be required based on the property’s current land use designation. Consider compatibility with nearby/adjacent properties.
- *Community Impacts.* Environmental Justice (EJ) principles will be considered when evaluating potential sites. Noise and vibration impacts can also be considered using screening distances of 1000 feet for unobstructed buildings and 650 feet for intervening buildings. Buildings and especially residences falling within these distances can be identified.

# Central Broward East-West Transit Study

## Storage and Maintenance Facility Location Study

### Evaluation Criteria - Streetcar

- *Natural Environmental Impacts.* This includes identifying potential red flags when looking at available wetland and floodplain data.
- *Site Topography.* The flatter and more level the ground is the less earthwork that will be required to develop the property.
- *Property Acquisition Costs.* Use available property appraisal information to determine the potential land acquisition costs.
- *Publicly Available Land.* Vacant government properties or other publicly available land is preferred, due to ease of acquisition.

In order to make the analysis and comparison a more quantitative exercise, a process involving numeric scoring about how well a site meets a specific criteria element is used. Also, for each element an importance weight is assigned to it. After applying the above criteria against candidate sites, they were compared against each other using an evaluation table similar to the following:

**Sample Evaluation Table (This is not a real evaluation below, but is strictly shown to demonstrate possible analysis):**

Site Evaluation Factors	Weight	Site Score					Weighted Score = (Weight) x (Site Score)				
		A	B	C	D	E	A	B	C	D	E
Size and Configuration (Operations)	3	2	3	1	2	1	6	9	3	6	3
Roadway Access	2	3	2	2	1	2	6	4	4	2	4
Operational Efficiency	3	2	2	3	2	1	6	6	9	6	3
Land Use Compatibility	2	3	3	2	1	1	6	6	4	2	2
Community Impacts	3	3	3	1	2	2	9	9	3	6	6
Natural Environmental Impacts	2	3	3	2	1	2	6	6	4	2	4
Site Topography	1	2	1	3	3	2	2	1	3	3	2
Property Acquisition Costs	3	3	2	2	1	1	9	6	6	3	3
Publicly Available Land	3	3	2	2	1	1	9	6	6	3	3
<b>Totals:</b>							<b>59</b>	<b>53</b>	<b>42</b>	<b>33</b>	<b>30</b>

# Central Broward East-West Transit Study

## Storage and Maintenance Facility Location Study

### Evaluation Criteria - Streetcar

#### **Scoring Scale:**

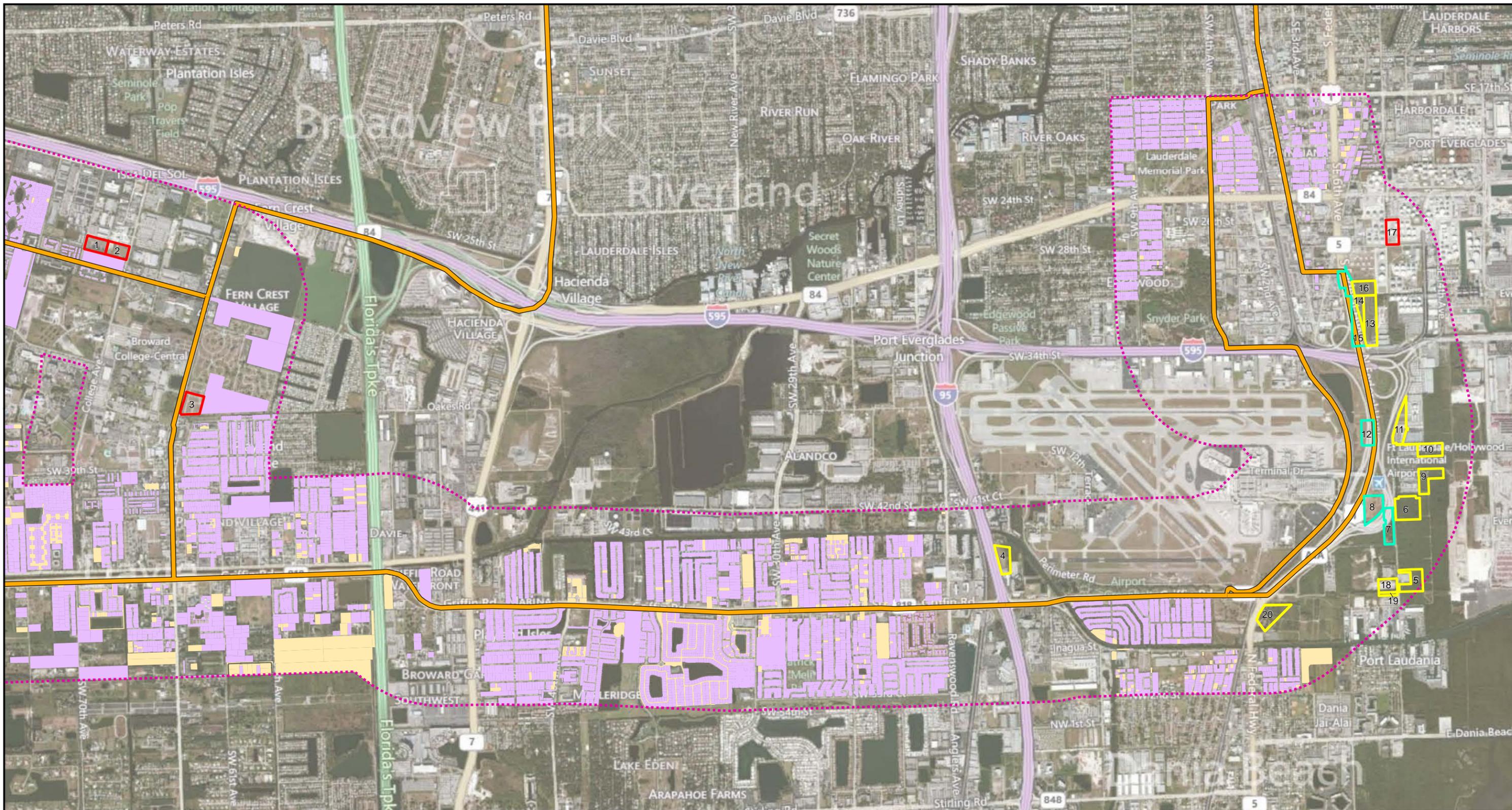
- 1 = "satisfies criteria poorly" OR "high cost"
- 2 = "satisfies criteria OK" OR "medium cost"
- 3 = "satisfies criteria well" OR "low cost"

#### **Weight Scale:**

- 1 = low importance
- 2 = medium importance
- 3 = high importance

After developing a composite score for each site, the highest weighted score identifies the site(s) that are the most promising. From this analysis, the project team was able to develop a conceptual site plan to graphically "test fit" the most promising site(s).

## **Appendix C: Streetcar Property Screening Maps**

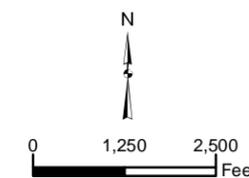


**Property Boundary/Land Use Type\***

- Vacant Industrial
- Vacant Government
- ROW, Streets, Channels, Ditches
- Vacant Residential
- Occupied Residential
- Half Mile Limit from Alternative
- All Alternatives

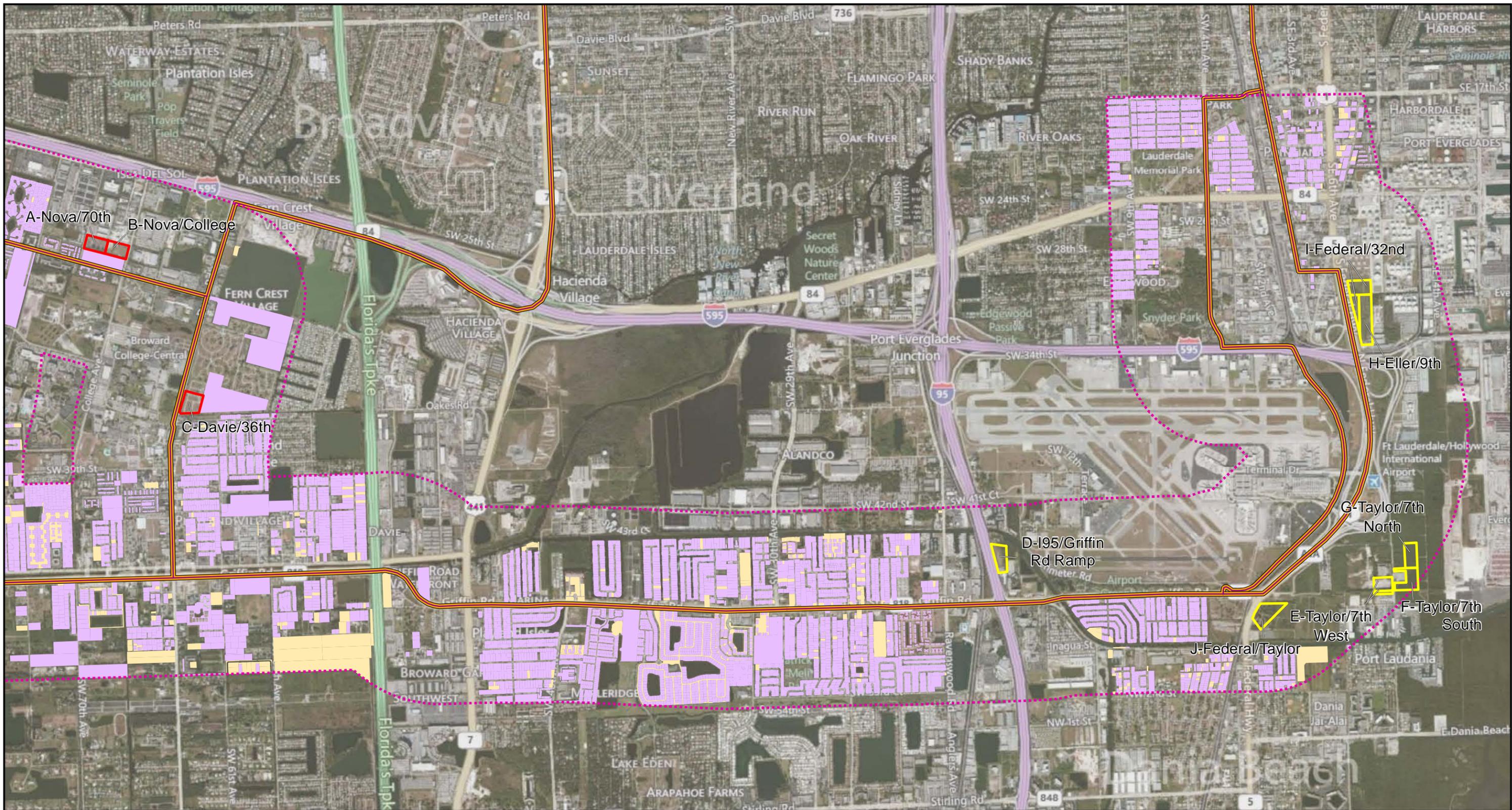
\*All of these features, both shaded areas and color lines, represent property boundaries and the land use of the properties. The data source is Broward County Property Appraisers Office -2011.

**Central Broward East-West Transit Study**



January 10, 2013

Streetcar Storage/Maintenance Facility Potential Candidates

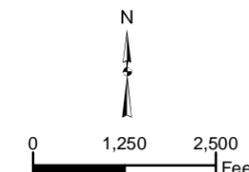


**Property Boundary/Land Use Type\***

- Vacant Industrial
- Vacant Government
- Vacant Residential
- Occupied Residential
- Half Mile Limit from Alternative
- All Alternatives

**\*All of these features, both shaded and color lines, represent property boundaries and the land use of the properties. The data source is Broward County Property Appraiser's Office-2011.**

**Central Broward East-West Transit Study**



January 14, 2013

Streetcar Storage/Maintenance Facility  
Short List Properties



Property Name	A-Nova/70th	B-Nova/College
Folio	504137011920	504137011850
Legal Name	Newmans Surevey Sub No 1 & 2	Newmans Surevey Sub No 1 & 2
Owner 1	HBF Davie LLC	HBF Davie LLC
Address	2401 College Ave, Davie Fla., 33317	2401 College Ave, Davie Fla., 33317
Acres	4.99782	4.99788
Zoning	RAC-RTW	RAC-RTW
Zoning Description	Davie-Regional Research and High Tech District -West	Davie-Regional Research and High Tech District -West
Land Use	Vacant Industrial	Vacant Industrial
NWI_Status	.93 acr Palust/Permanent Flood	.13 acr Palust/Permanently Flood
FEMA Flood Zone	AH	AH
Land Value	\$1,633,500.00	\$1,633,500.00



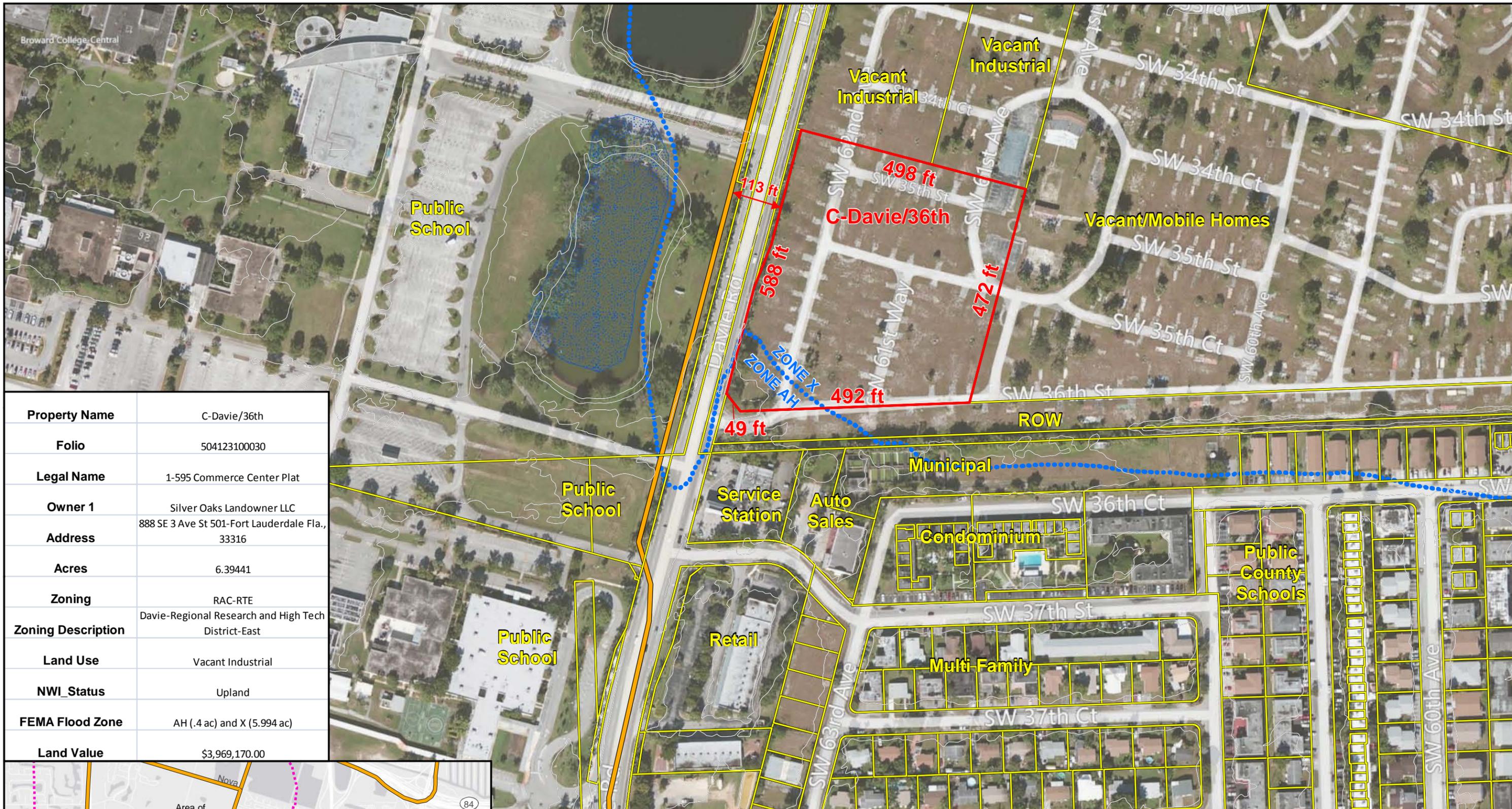
Candidate Property Location  
 All Alternatives  
 Elevation 2 ft Contours  
 National Wetlands\*  
 Half Mile Limit from Alternative  
 Property Boundaries  
 FEMA 1996 Floodplain Boundaries\*\*

\* National Wetlands (NWI) were created at 1:24,000 and are not to be interpreted as surveyed accurate. The currency of the data is estimated to be 2011.  
 \*\* The properties on this map are in an AH designated zone. Areas with a 1% annual chance of shallow flooding, usually in the form of a pond, with an average depth ranging from 1 to 3 feet.

### Central Broward East-West Transit Study

September 19, 2012

Streetcar Storage/Maintenance Facilities  
Detail: Candidate Properties A&B



<b>Property Name</b>	C-Davie/36th
<b>Folio</b>	504123100030
<b>Legal Name</b>	1-595 Commerce Center Plat
<b>Owner 1</b>	Silver Oaks Landowner LLC
<b>Address</b>	888 SE 3 Ave St 501-Fort Lauderdale Fla., 33316
<b>Acres</b>	6.39441
<b>Zoning</b>	RAC-RTE
<b>Zoning Description</b>	Davie-Regional Research and High Tech District-East
<b>Land Use</b>	Vacant Industrial
<b>NWI_Status</b>	Upland
<b>FEMA Flood Zone</b>	AH (.4 ac) and X (5.994 ac)
<b>Land Value</b>	\$3,969,170.00

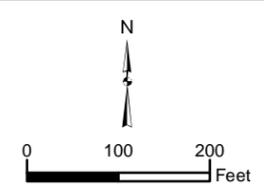


- Candidate Property Location
- All Alternatives
- Elevation 2 ft Contours
- National Wetlands\*
- Half Mile Limit from Alternative
- Property Boundaries
- FEMA 1996 Floodplain Boundaries\*\*

\* National Wetlands (NWI) were created at 1:24,000 and are not to be interpreted as surveyed accurate. The currency of the data is estimated to be 2011.

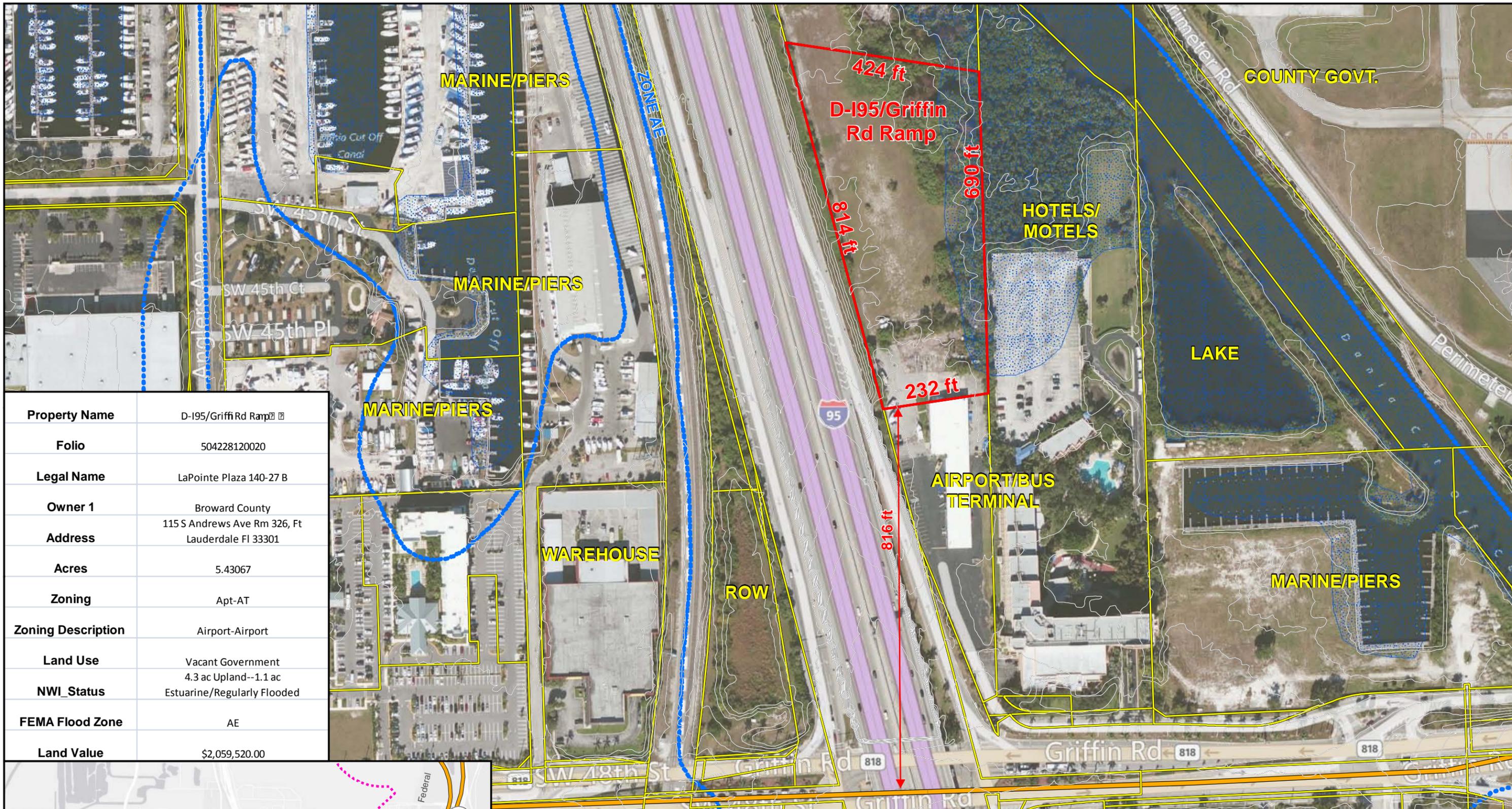
\*\* The property on this map is in Zone AH (areas with a 1% annual chance of shallow flooding, usually in the form of a pond, with an average depth ranging from 1 to 3 feet) and Zone X (areas of minimal flood).

## Central Broward East-West Transit Study

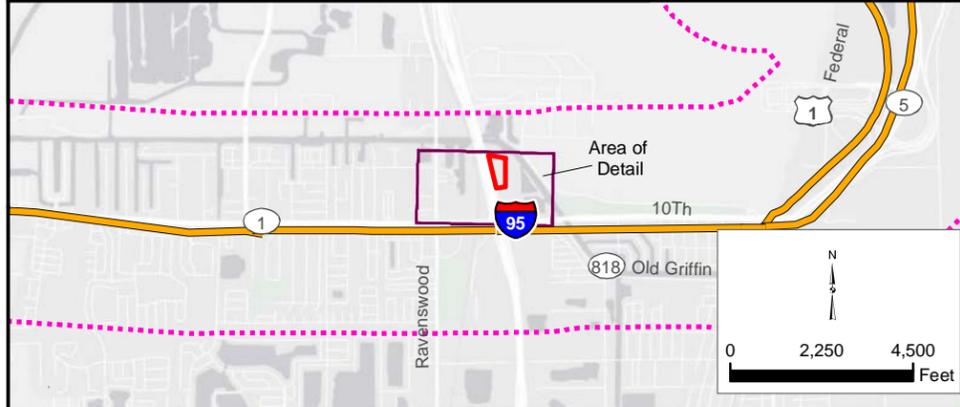


September 19, 2012

Streetcar Storage/Maintenance Facilities  
Detail: Candidate Property C



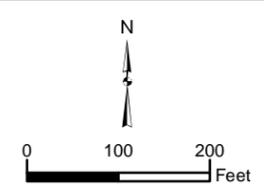
<b>Property Name</b>	D-195/Griffi Rd Ramp
<b>Folio</b>	504228120020
<b>Legal Name</b>	LaPointe Plaza 140-27 B
<b>Owner 1</b>	Broward County
<b>Address</b>	115 S Andrews Ave Rm 326, Ft Lauderdale FL 33301
<b>Acres</b>	5.43067
<b>Zoning</b>	Apt-AT
<b>Zoning Description</b>	Airport-Airport
<b>Land Use</b>	Vacant Government 4.3 ac Upland--1.1 ac
<b>NWI_Status</b>	Estuarine/Regularly Flooded
<b>FEMA Flood Zone</b>	AE
<b>Land Value</b>	\$2,059,520.00



- Candidate Property Location
- All Alternatives
- Elevation 2 ft Contours
- National Wetlands\*
- Half Mile Limit from Alternative
- Property Boundaries
- FEMA 1996 Floodplain Boundaries\*\*

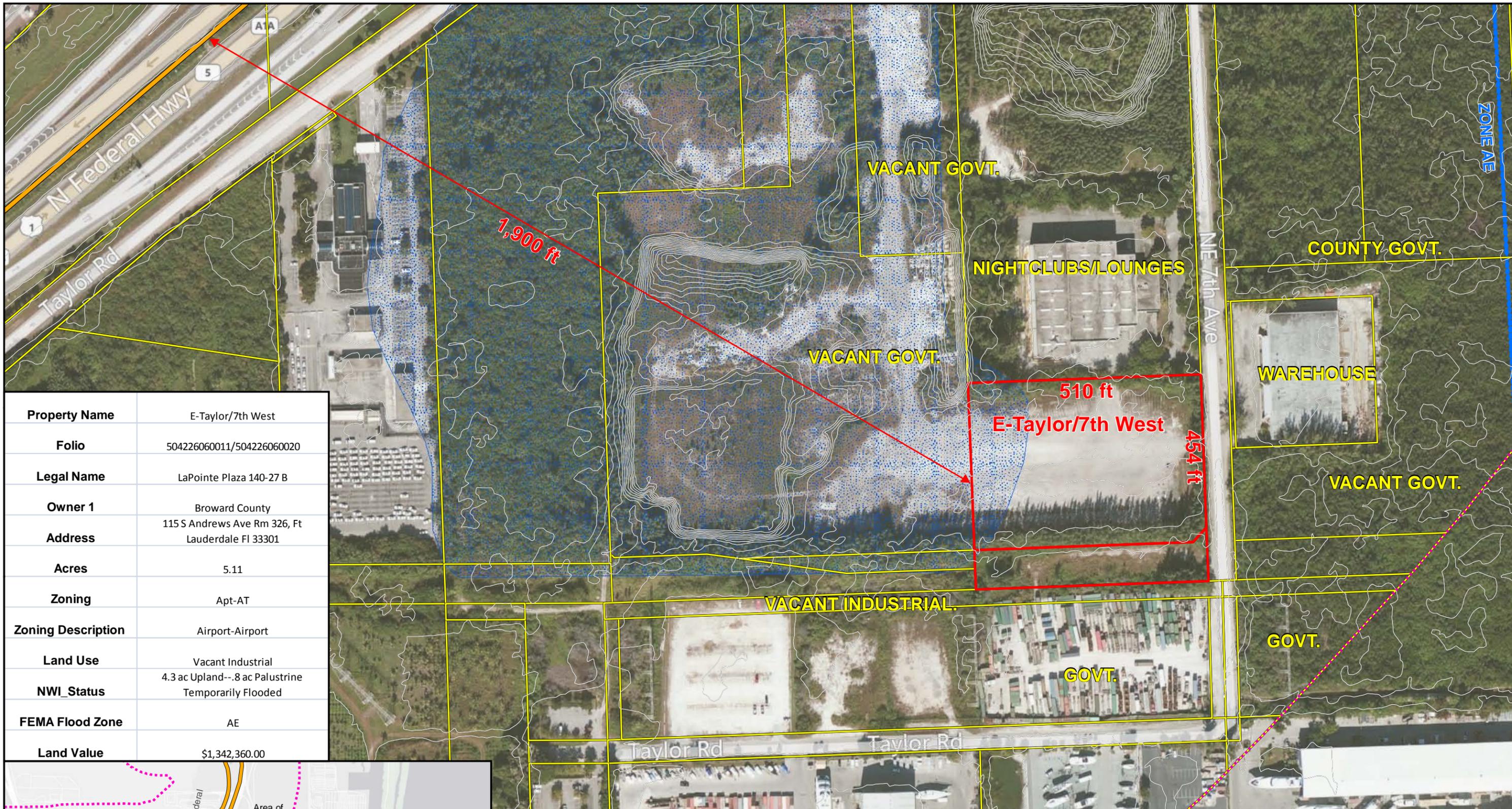
\* National Wetlands (NWI) were created at 1:24,000 and are not to be interpreted as surveyed accurate. The currency of the data is estimated to be 2011.  
 \*\*The property on this map is in Zone AE (The base floodplain where base flood elevations are provided).

## Central Broward East-West Transit Study

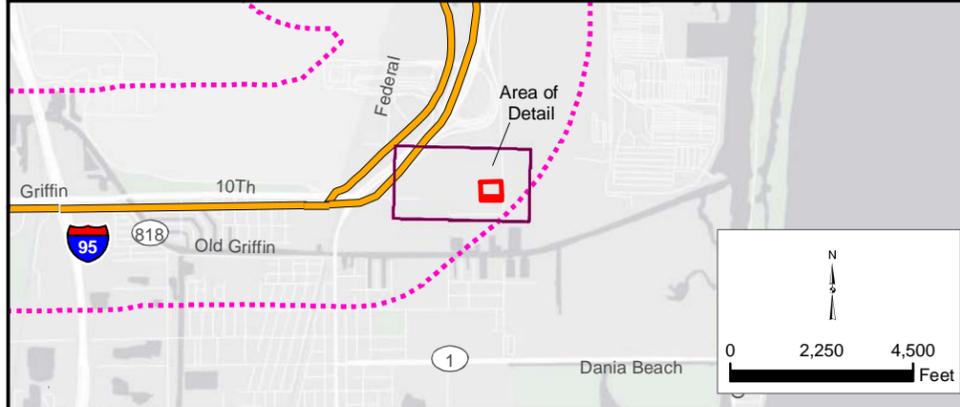


September 19, 2012

Streetcar Storage/Maintenance Facilities  
Detail: Candidate Property D



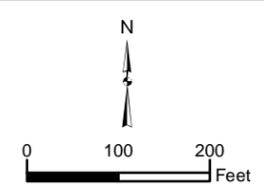
<b>Property Name</b>	E-Taylor/7th West
<b>Folio</b>	504226060011/504226060020
<b>Legal Name</b>	LaPointe Plaza 140-27 B
<b>Owner 1</b>	Broward County
<b>Address</b>	115 S Andrews Ave Rm 326, Ft Lauderdale FL 33301
<b>Acres</b>	5.11
<b>Zoning</b>	Apt-AT
<b>Zoning Description</b>	Airport-Airport
<b>Land Use</b>	Vacant Industrial
<b>NWI_Status</b>	4.3 ac Upland--.8 ac Palustrine Temporarily Flooded
<b>FEMA Flood Zone</b>	AE
<b>Land Value</b>	\$1,342,360.00



- Candidate Property Location
- All Alternatives
- Elevation 2 ft Contours
- National Wetlands\*
- Half Mile Limit from Alternative
- Property Boundaries
- FEMA 1996 Floodplain Boundaries\*\*

\* National Wetlands (NWI) were created at 1:24,000 and are not to be interpreted as surveyed accurate. The currency of the data is estimated to be 2011.  
 \*\*The property on this map is in Zone AE (The base floodplain where base flood elevations are provided).

## Central Broward East-West Transit Study



September 19, 2012

Streetcar Storage/Maintenance Facilities  
Detail: Candidate Property E



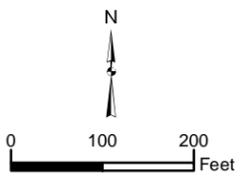
<b>Property Name</b>	F-Taylor/7th South
<b>Folio</b>	504226000120
<b>Legal Name</b>	26-50-42
<b>Owner 1</b>	Broward County
<b>Address</b>	115 S Andrews Ave Rm 326, Ft Lauderdale FL 33301
<b>Acres</b>	6.29574
<b>Zoning</b>	Apt-AT
<b>Zoning Description</b>	Airport-Airport
<b>Land Use</b>	Vacant Government
<b>NWI_Status</b>	5.9 ac Estuarine and Marine Wetland
<b>FEMA Flood Zone</b>	AE
<b>Land Value</b>	\$1,646,570.00



- Candidate Property Location
- All Alternatives
- Elevation 2 ft Contours
- National Wetlands\*
- Half Mile Limit from Alternative
- Property Boundaries
- FEMA 1996 Floodplain Boundaries\*\*

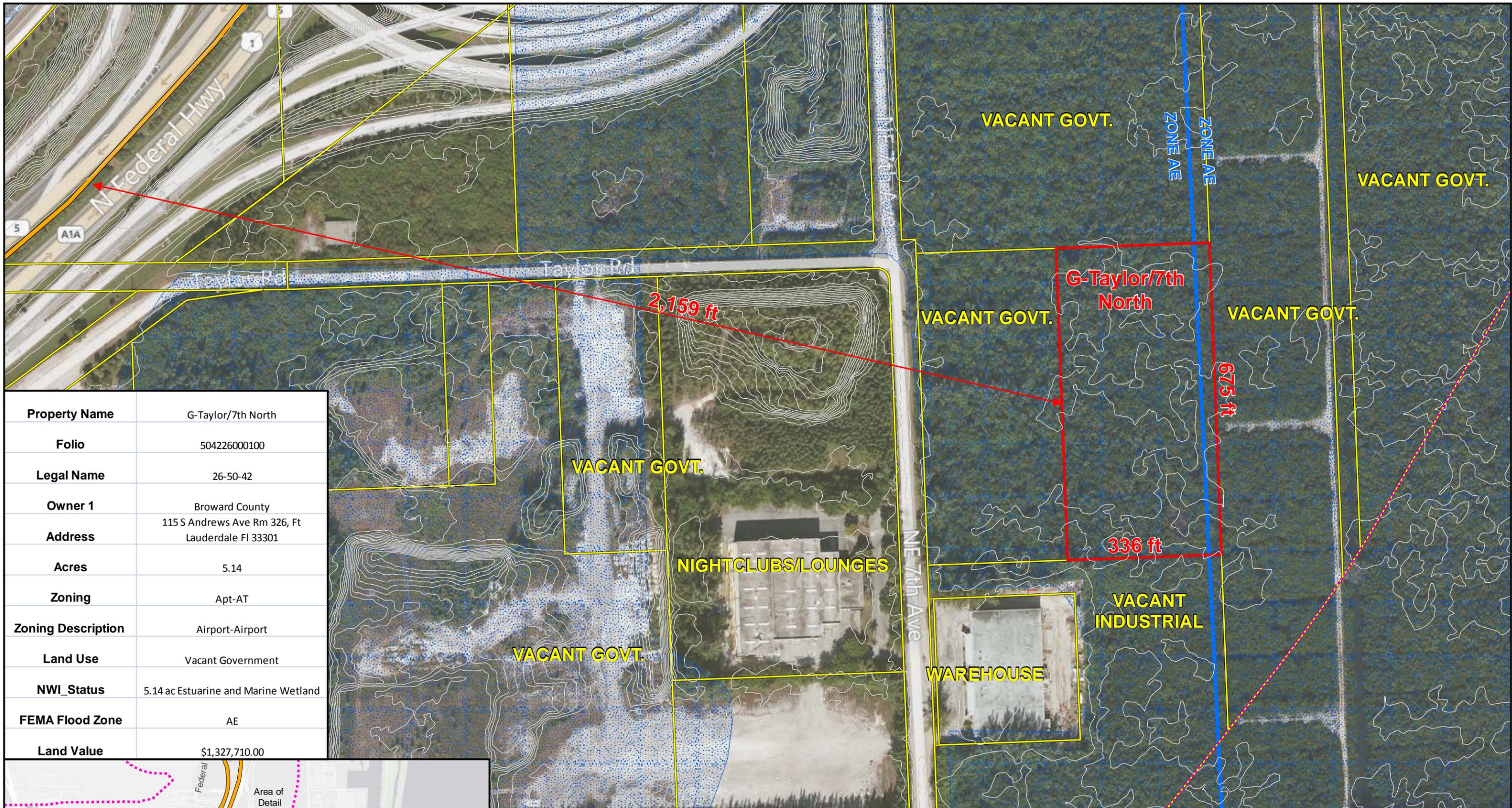
\* National Wetlands (NWI) were created at 1:24,000 and are not to be interpreted as surveyed accurate. The currency of the data is estimated to be 2011.  
 \*\*The property on this map is in Zone AE (The base floodplain where base flood elevations are provided).

## Central Broward East-West Transit Study

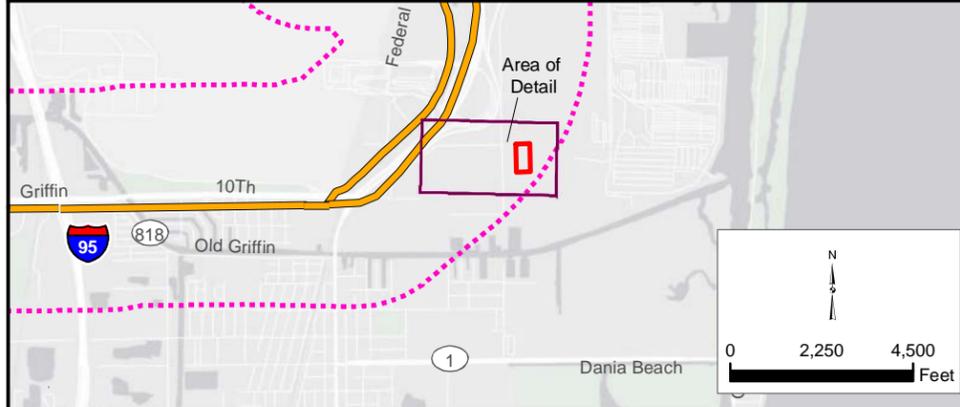


September 19, 2012

Streetcar Storage/Maintenance Facilities  
Detail: Candidate Property F



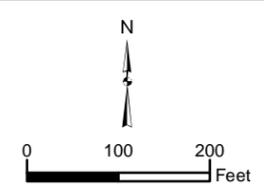
<b>Property Name</b>	G-Taylor/7th North
<b>Folio</b>	504226000100
<b>Legal Name</b>	26-50-42
<b>Owner 1</b>	Broward County
<b>Address</b>	115 S Andrews Ave Rm 326, Ft Lauderdale FL 33301
<b>Acres</b>	5.14
<b>Zoning</b>	Apt-AT
<b>Zoning Description</b>	Airport-Airport
<b>Land Use</b>	Vacant Government
<b>NWI_Status</b>	5.14 ac Estuarine and Marine Wetland
<b>FEMA Flood Zone</b>	AE
<b>Land Value</b>	\$1,327,710.00



- Candidate Property Location
- All Alternatives
- Elevation 2 ft Contours
- National Wetlands\*
- Half Mile Limit from Alternative
- Property Boundaries
- FEMA 1996 Floodplain Boundaries\*\*

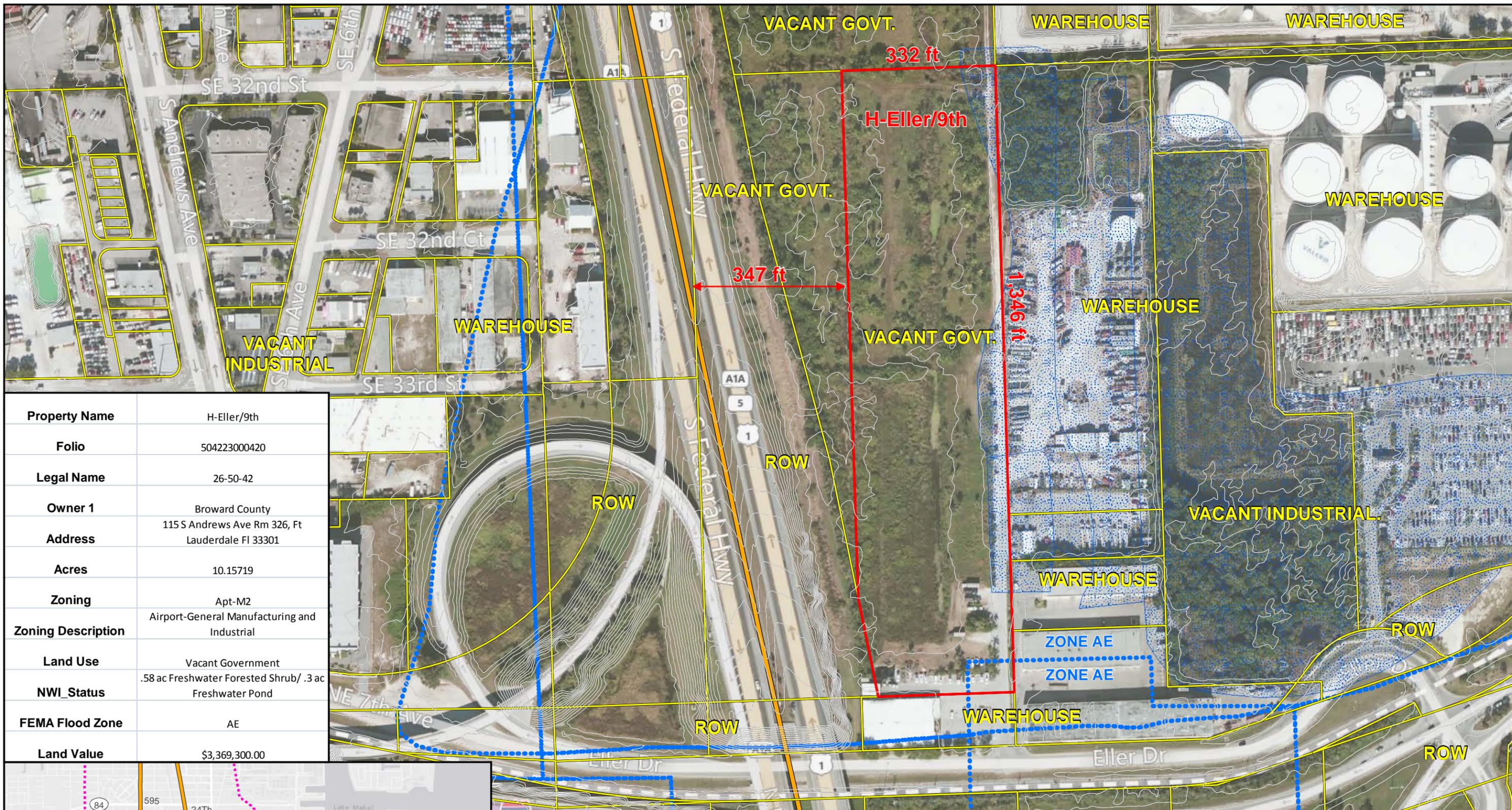
\* National Wetlands (NWI) were created at 1:24,000 and are not to be interpreted as surveyed accurate. The currency of the data is estimated to be 2011.  
 \*\*The property on this map is in Zone AE (The base floodplain where base flood elevations are provided).

## Central Broward East-West Transit Study

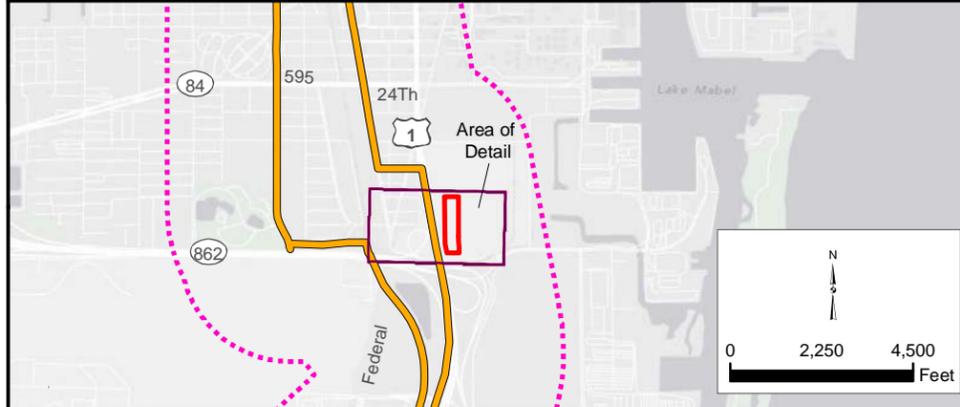


September 19, 2012

Streetcar Storage/Maintenance Facilities  
Detail: Candidate Property G



<b>Property Name</b>	H-Eller/9th
<b>Folio</b>	504223000420
<b>Legal Name</b>	26-50-42
<b>Owner 1</b>	Broward County
<b>Address</b>	115 S Andrews Ave Rm 326, Ft Lauderdale FL 33301
<b>Acres</b>	10.15719
<b>Zoning</b>	Apt-M2
<b>Zoning Description</b>	Airport-General Manufacturing and Industrial
<b>Land Use</b>	Vacant Government
<b>NWI_Status</b>	.58 ac Freshwater Forested Shrub/ .3 ac Freshwater Pond
<b>FEMA Flood Zone</b>	AE
<b>Land Value</b>	\$3,369,300.00



**Legend**

- Candidate Property Location
- All Alternatives
- Elevation 2 ft Contours
- National Wetlands\*
- Half Mile Limit from Alternative
- Property Boundaries
- FEMA 1996 Floodplain Boundaries\*\*

\* National Wetlands (NWI) were created at 1:24,000 and are not to be interpreted as surveyed accurate. The currency of the data is estimated to be 2011.  
 \*\*The property on this map is in Zone AE (The base floodplain where base flood elevations are provided).

**Central Broward East-West Transit Study**

September 20, 2012

Streetcar Storage/Maintenance Facilities  
Detail: Candidate Property H



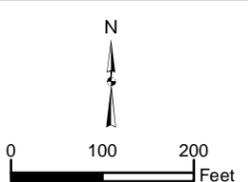
<b>Property Name</b>	I-Federal/32nd
<b>Folio</b>	504223000430/504223000221
<b>Legal Name</b>	23-50-42
<b>Owner 1</b>	Broward County
<b>Address</b>	115 S Andrews Ave Rm 326, Ft Lauderdale FL 33301
<b>Acres</b>	8.36926
<b>Zoning</b>	Apt-M2
<b>Zoning Description</b>	Airport-General Manufacturing and Industrial
<b>Land Use</b>	Vacant Government
<b>NWI_Status</b>	.06 ac Freshwater Forested Shrub
<b>FEMA Flood Zone</b>	AE
<b>Land Value</b>	\$2,783,220.00



- Candidate Property Location
- All Alternatives
- Elevation 2 ft Contours
- National Wetlands\*
- Half Mile Limit from Alternative
- Property Boundaries
- FEMA 1996 Floodplain Boundaries\*\*

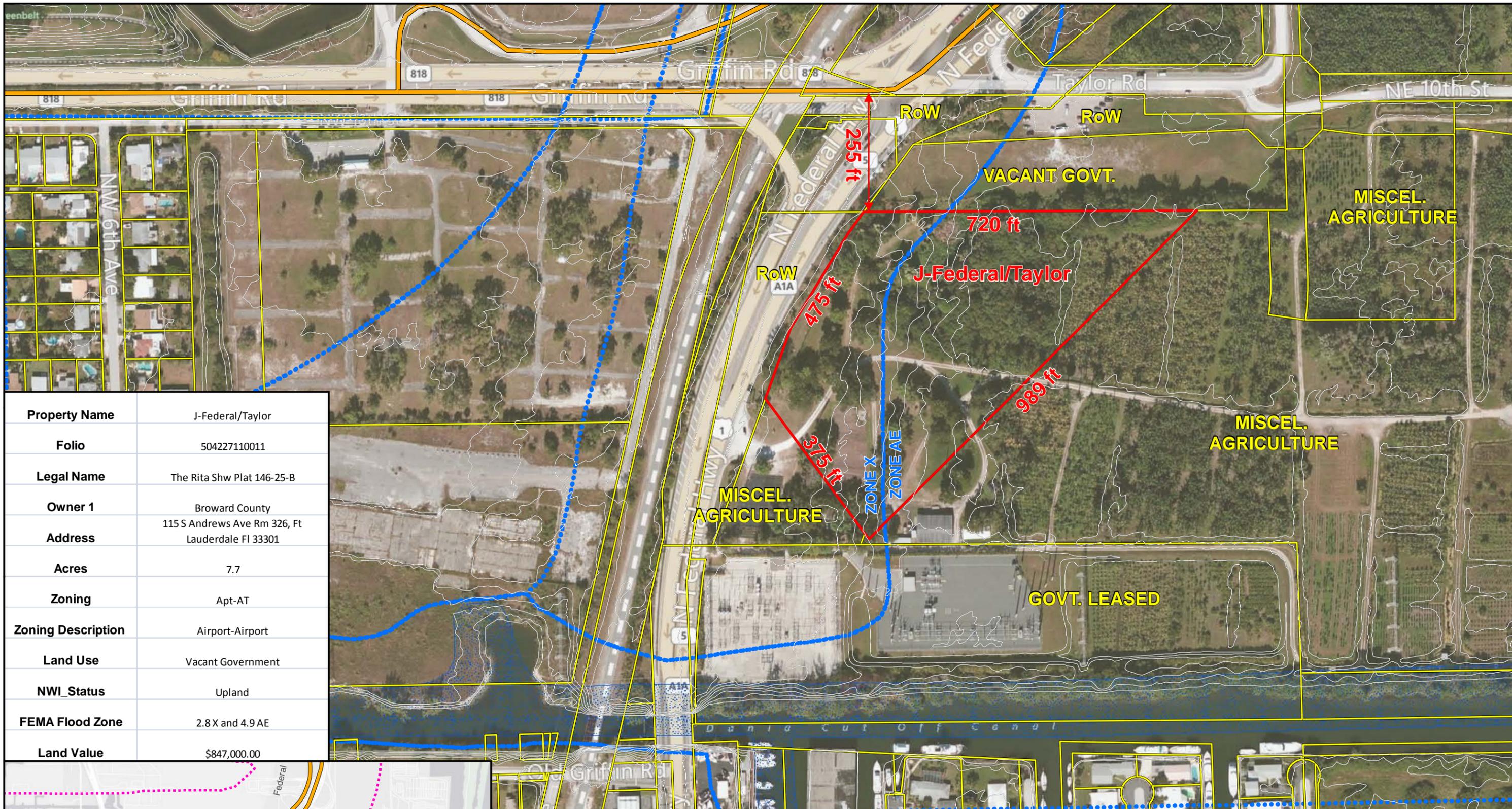
\* National Wetlands (NWI) were created at 1:24,000 and are not to be interpreted as surveyed accurate. The currency of the data is estimated to be 2011.  
 \*\*The property on this map is in Zone AE (The base floodplain where base flood elevations are provided).

### Central Broward East-West Transit Study



September 20, 2012

Streetcar Storage/Maintenance Facilities  
Detail: Candidate Property I



<b>Property Name</b>	J-Federal/Taylor
<b>Folio</b>	504227110011
<b>Legal Name</b>	The Rita Shw Plat 146-25-B
<b>Owner 1</b>	Broward County
<b>Address</b>	115 S Andrews Ave Rm 326, Ft Lauderdale FL 33301
<b>Acres</b>	7.7
<b>Zoning</b>	Apt-AT
<b>Zoning Description</b>	Airport-Airport
<b>Land Use</b>	Vacant Government
<b>NWI_Status</b>	Upland
<b>FEMA Flood Zone</b>	2.8 X and 4.9 AE
<b>Land Value</b>	\$847,000.00



Candidate Property Location  
 All Alternatives  
 Elevation 2 ft Contours  
 National Wetlands\*  
 Half Mile Limit from Alternative  
 Property Boundaries  
 FEMA 1996 Floodplain Boundaries\*\*

\* National Wetlands (NWI) were created at 1:24,000 and are not to be interpreted as surveyed accurate. The currency of the data is estimated to be 2011.  
 \*\*The property on this map is in Zone AE (The base floodplain where base flood elevations are provided) and Zone X, (Area outside of the 100 and 500 year flood plain.)

## Central Broward East-West Transit Study

September 20, 2012

Streetcar Storage/Maintenance Facilities  
Detail: Candidate Property J

**Appendix D: Streetcar Site Evaluation Table and  
Property Data**

**Central Broward East-West Transit Study**  
**Streetcar Storage and Maintenance Facility Location Study**

**Evaluation Table**

Site Evaluation Factors	Weight	Site Score									
		Site A	Site B	Site C	Site D	Site E	Site F	Site G	Site H	Site I	Site J
Size and Configuration (Operations)	3	2	2	2	2	2	2	2	3	3	3
Roadway and Rail Access	2	2	2	2	1	1	1	1	1	2	2
Operational Efficiency	3	1	1	1	2	3	3	3	2	2	3
Land Use Compatibility	2	2	2	2	1	2	1	1	3	3	1
Community Impacts	3	1	1	1	2	2	2	2	3	3	3
Natural Environmental Impacts	2	0	2	3	2	2	1	1	3	3	3
Site Topography	1	2	2	3	2	2	1	1	2	1	1
Property Acquisition Costs	3	2	2	1	2	3	2	3	1	1	3
Publicly Available Land	3	2	2	2	3	2	3	3	3	3	3

Weighted Score = (Weight) x (Site Score)										
Site A	Site B	Site C	Site D	Site E	Site F	Site G	Site H	Site I	Site J	
6	6	6	6	6	6	6	9	9	9	
4	4	4	2	2	2	2	2	4	4	
3	3	3	6	9	9	9	6	6	9	
4	4	4	2	4	2	2	6	6	2	
3	3	3	6	6	6	6	9	9	9	
0	4	6	4	4	2	2	6	6	6	
2	2	3	2	2	1	1	2	1	1	
6	6	3	6	9	6	9	3	3	9	
6	6	6	9	6	9	9	9	9	9	
<b>Totals:</b>	<b>34</b>	<b>38</b>	<b>38</b>	<b>43</b>	<b>48</b>	<b>43</b>	<b>46</b>	<b>52</b>	<b>53</b>	<b>58</b>

**Scoring Scale:**

- 0 = fatal flaw
- 1 = satisfies criteria poorly / high cost
- 2 = satisfies criteria OK / medium cost
- 3 = satisfies criteria well / low cost

**Weight Scale:**

- 1 = low importance
- 2 = medium importance
- 3 = high importance

**Central Broward East-West Transit Study**  
**Streetcar Storage and Maintenance Facility Location Study**

**Property Data**

**Site A - Nova/70th**

<b>Site Evaluation Factors</b>	
<b>Size and Configuration</b>	~ 5 acres (370' x 587')
<b>Roadway and Rail Access</b>	Access to the site can be achieved at SW 70th Ave.  The site is located approximately 429' from the alignment.  A portion of the Condominium or Residential properties adjacent to the alignment at Nova Drive may need to be taken in order to accommodate adequate yard leads to the facility.
<b>Operational Efficiency</b>	This candidate site is only viable if streetcar technology is used from the Griffin Road Tri-Rail Station to the SFEC.  This site would be located at the western end of the proposed streetcar operation, far from the planned Wave facility, increasing travel times and deadheading for Wave vehicles needing heavy maintenance.
<b>Land Use Compatibility</b>	The property's current land use: Vacant Industrial  The property's current zoning: Davie-Regional Research and High Tech District - West  Re-zoning may be required.
<b>Community Impacts</b>	A residential area is located just south and adjacent to the property.  Condominium areas are within a 1000' of the site, which could result in possible noise and vibration impacts.
<b>Natural Environmental Impacts</b>	0.93 acre Palust/Permanent Flood  The wetland is located in the middle of the site. Mitigation measures would be required.  This site falls within an AH designated flood zone. AH designated flood zones are areas with a 1% annual chance of shallow flooding, usually in the form of a pond, with an average depth ranging from 1 to 3 feet.
<b>Site Topography</b>	Only minimal elevation contours appear at the site, therefore the ground is flat for the most part which should help minimize earthwork and the need for retaining walls.
<b>Property Acquisition Costs</b>	\$1,633,500.00
<b>Publicly Available Land</b>	This property is Vacant Industrial. Although this type of property should be relatively easy to acquire, Vacant Government properties probably offer the fastest possible land acquisition time.

**Notes:**

1. Refer to the graphics in Appendix C for a detailed view of each site.
2. NWI wetlands data used might not be 100% accurate and represent all current ground conditions. Future studies should verify data in the field.
3. The taxable land value found is shown in the table above. This value is also assumed to be the appraised or listed value of the property for cost estimating purposes.

**Central Broward East-West Transit Study**  
**Streetcar Storage and Maintenance Facility Location Study**

**Property Data**

**Site B - Nova/College**

<b>Site Evaluation Factors</b>	
<b>Size and Configuration</b>	~ 5 acres (370' x 587')
<b>Roadway and Rail Access</b>	Access to the site can be achieved at College Ave.  The site is located approximately 429' from the alignment.  A portion of the Service Station or Residential properties adjacent to the alignment at Nova Drive may need to be taken in order to accommodate adequate yard leads to the facility.
<b>Operational Efficiency</b>	This candidate site is only viable if streetcar technology is used from the Griffin Road Tri-Rail Station to the SFEC.  This site would be located at the western end of the proposed streetcar operation, far from the planned Wave facility, increasing travel times and deadheading for Wave vehicles needing heavy maintenance.
<b>Land Use Compatibility</b>	The property's current land use: Vacant Industrial  The property's current zoning: Davie-Regional Research and High Tech District - West  Re-zoning may be required.
<b>Community Impacts</b>	A residential area is located just south and adjacent to the property.  Condominium, Office and Public County School areas are within a 1000' of the site, which could result in possible noise and vibration impacts.
<b>Natural Environmental Impacts</b>	0.13 acre Palust/Permanent Flood  The wetland is located at the western edge of the site. This wetland may be avoided with a good site design. Minimal to no mitigation measures would be necessary.  This site falls within an AH designated flood zone. AH designated flood zones are areas with a 1% annual chance of shallow flooding, usually in the form of a pond, with an average depth ranging from 1 to 3 feet.
<b>Site Topography</b>	Only minimal elevation contours appear at the site, therefore the ground is flat for the most part which should help minimize earthwork and the need for retaining walls.
<b>Property Acquisition Costs</b>	\$1,633,500.00
<b>Publicly Available Land</b>	This property is Vacant Industrial. Although this type of property should be relatively easy to acquire, Vacant Government properties probably offer the fastest possible land acquisition time.

**Notes:**

1. Refer to the graphics in Appendix C for a detailed view of each site.
2. NWI wetlands data used might not be 100% accurate and represent all current ground conditions. Future studies should verify data in the field.
3. The taxable land value found is shown in the table above. This value is also assumed to be the appraised or listed value of the property for cost estimating purposes.

**Central Broward East-West Transit Study**  
**Streetcar Storage and Maintenance Facility Location Study**

**Property Data**

**Site C - Davie/36th**

<b>Site Evaluation Factors</b>	
<b>Size and Configuration</b>	~ 6.4 acres (Non-geometric shape - see detailed map for exact dimensions.)
<b>Roadway and Rail Access</b>	Access to the site can be achieved at Davie Rd. or SW 36th St.  The site is located approximately 113' from the alignment.  It appears that no additional properties would need to be taken in order to accommodate adequate yard leads to the facility. The yard lead could stay on Davie Road until it reaches the southwest corner of the site.
<b>Operational Efficiency</b>	This candidate site is only viable if streetcar technology is used from the Griffin Road Tri-Rail Station to the SFEC.  This site would be located near the western end of the proposed streetcar operation, somewhat far from the planned Wave facility, increasing travel times and deadheading for Wave vehicles needing heavy maintenance.
<b>Land Use Compatibility</b>	The property's current land use: Vacant Industrial  The property's current zoning: Davie-Regional Research and High Tech District - East  Re-zoning may be required.
<b>Community Impacts</b>	A Vacant/Mobile Home area is located just east and adjacent to the property.  Public School, Condominium and Multi-Family areas are within a 1000' of the site, which could result in possible noise and vibration impacts.
<b>Natural Environmental Impacts</b>	Upland - No wetlands.  This site falls within AH and X designated flood zones. AH designated flood zones are areas with a 1% annual chance of shallow flooding, usually in the form of a pond, with an average depth ranging from 1 to 3 feet. X designated flood zones are areas of minimal flooding. The majority of this site (6 acres) has an X flood zone designation.
<b>Site Topography</b>	No elevation contours appear at this site, therefore the ground is flat which should result in very minimal to no earthwork required.
<b>Property Acquisition Costs</b>	\$3,969,170.00
<b>Publicly Available Land</b>	This property is Vacant Industrial. Although this type of property should be relatively easy to acquire, Vacant Government properties probably offer the fastest possible land acquisition time.

**Notes:**

1. Refer to the graphics in Appendix C for a detailed view of each site.
2. NWI wetlands data used might not be 100% accurate and represent all current ground conditions. Future studies should verify data in the field.
3. The taxable land value found is shown in the table above. This value is also assumed to be the appraised or listed value of the property for cost estimating purposes.

**Central Broward East-West Transit Study**  
**Streetcar Storage and Maintenance Facility Location Study**

**Property Data**

**Site D - I-95/Griffin Road Ramp**

<b>Site Evaluation Factors</b>	
<b>Size and Configuration</b>	~ 5.4 acres (Non-geometric shape - see detailed map for exact dimensions.)
<b>Roadway and Rail Access</b>	Access to the site can be achieved from the Griffin Road northbound ramp onto I-95. Access from underneath the I-95 elevated structure is not feasible due to the fact that the structure is built on fill.  The site is located approximately 816' from the alignment.  If selected, the yard lead crossing westbound Griffin Road, the Airport/Bus Terminal access road, and the I-95 on ramp would need to be addressed. A portion of highway RoW and/or Airport-Bus Terminal property will need to be taken in order to accommodate adequate yard leads to the facility.
<b>Operational Efficiency</b>	This candidate site is located near the Griffin Road Tri-Rail Station.  If a streetcar extension to the SFEC ends up not being selected, or isn't built for the foreseeable future, then this location would be at the western end of the CBT streetcar operation.  This site is closer to the Wave facility than the candidates near the SFEC, which would offer less travel time and deadheading for Wave vehicles needing heavy maintenance.
<b>Land Use Compatibility</b>	The property's current land use: Vacant Government  The property's current zoning: Airport-Airport  Re-zoning may be required.
<b>Community Impacts</b>	A Hotels/Motels area is located just east and adjacent to the property.  No residential properties are located within a 1000' of the site, reducing possible noise and vibration impacts.
<b>Natural Environmental Impacts</b>	1.1 acre Estuarine/Regularly Flooded  The wetland is located at the eastern edge of the site. This wetland may be avoided with a good site design. Only moderate mitigation measures seem plausible.  This site falls within an AE designated flood zone. AE designated flood zones are base floodplain areas, where base flood elevations are provided.
<b>Site Topography</b>	Only minimal elevation contours appear at the site, therefore the ground is flat for the most part which should help minimize earthwork and the need for retaining walls.
<b>Property Acquisition Costs</b>	\$2,059,520.00
<b>Publicly Available Land</b>	This property is Vacant Government. This type of property is probably ideal if land acquisition time is critical.

**Notes:**

1. Refer to the graphics in Appendix C for a detailed view of each site.
2. NWI wetlands data used might not be 100% accurate and represent all current ground conditions. Future studies should verify data in the field.
3. The taxable land value found is shown in the table above. This value is also assumed to be the appraised or listed value of the property for cost estimating purposes.

**Central Broward East-West Transit Study**  
**Streetcar Storage and Maintenance Facility Location Study**

**Property Data**

**Site E - Taylor/7th West**

<b>Site Evaluation Factors</b>	
<b>Size and Configuration</b>	<p>~ 5.1 acres (454' x 510')</p> <p>This site consists of two properties clustered together.</p>
<b>Roadway and Rail Access</b>	<p>Access to the site can be achieved at NE 7th Ave.</p> <p>The site is located approximately 1900' from the alignment.</p> <p>A portion of government property may need to be taken in order to accommodate adequate yard leads to the facility. Possible approaches include taking a more direct way to the site with a spur track extending along NE 10th Street, or taking a more roundabout way along Taylor Road.</p>
<b>Operational Efficiency</b>	<p>This candidate site is located near the Fort Lauderdale-Hollywood International Airport, south of I-595.</p> <p>This site is somewhat centrally located between the downtown Wave and the Griffin Road Tri-Rail Station.</p> <p>This site is within reasonable distance to the Wave facility, offering moderate travel times for Wave vehicles requiring heavy maintenance. It's location should also lessen <u>deadheading for the CBT streetcar operation.</u></p>
<b>Land Use Compatibility</b>	<p>The property's current land use: Vacant Industrial</p> <p>The property's current zoning: Airport-Airport</p> <p>Re-zoning may be required.</p>
<b>Community Impacts</b>	<p>A Nightclubs/Lounges area is located just north and adjacent to the property.</p> <p>No residential properties are located within a 1000' of the site, reducing possible noise and vibration impacts.</p>
<b>Natural Environmental Impacts</b>	<p>0.8 acre Palustrine/Temporarily Flooded</p> <p>The wetland is located at the western edge of the site. This wetland may be avoided with a good site design. Only moderate mitigation measures seem plausible.</p> <p>This site falls within an AE designated flood zone. AE designated flood zones are base floodplain areas, where base flood elevations are provided.</p>
<b>Site Topography</b>	<p>There's some bunching of elevation contours at the site, therefore the ground is a bit hilly which would result in more earthwork and the possible need for retaining walls.</p>
<b>Property Acquisition Costs</b>	<p>\$1,342,360.00</p>
<b>Publicly Available Land</b>	<p>This property is Vacant Industrial. Although this type of property should be relatively easy to acquire, Vacant Government properties probably offer the fastest possible land acquisition time.</p>

**Notes:**

1. Refer to the graphics in Appendix C for a detailed view of each site.
2. NWI wetlands data used might not be 100% accurate and represent all current ground conditions. Future studies should verify data in the field.
3. The taxable land value found is shown in the table above. This value is also assumed to be the appraised or listed value of the property for cost estimating purposes.

**Central Broward East-West Transit Study**  
**Streetcar Storage and Maintenance Facility Location Study**

**Property Data**

**Site F - Taylor/7th South**

<b>Site Evaluation Factors</b>	
<b>Size and Configuration</b>	~ 6.3 acres (Non-geometric shape - see detailed map for exact dimensions.)
<b>Roadway and Rail Access</b>	Access to the site can be achieved at NE 7th Ave.  The site is located approximately 2007' from the alignment.  A portion of government property may need to be taken in order to accommodate adequate yard leads to the facility. Possible approaches include taking a more direct way to the site with a spur track extending along NE 10th Street, or taking a more roundabout way along Taylor Road.
<b>Operational Efficiency</b>	This candidate site is located near the Fort Lauderdale-Hollywood International Airport, south of I-595.  This site is somewhat centrally located between the downtown Wave and the Griffin Road Tri-Rail Station.  This site is within reasonable distance to the Wave facility, offering moderate travel times for Wave vehicles requiring heavy maintenance. It's location should also lessen deadheading for the CBT streetcar operation.
<b>Land Use Compatibility</b>	The property's current land use: Vacant Government  The property's current zoning: Airport-Airport  Re-zoning may be required.
<b>Community Impacts</b>	No residential properties are located within a 1000' of the site, reducing possible noise and vibration impacts.  A Nightclubs/Lounges area is located across NE 7th Avenue from the property.
<b>Natural Environmental Impacts</b>	5.9 acre Estuarine and Marine Wetland  The majority of the site is comprised of wetlands. Estuarine wetlands are regularly flooded. Mitigation measures would be required.  This site falls within an AE designated flood zone. AE designated flood zones are base floodplain areas, where base flood elevations are provided.
<b>Site Topography</b>	Several elevation contours appear at the site, therefore the ground is somewhat hilly which would result in more earthwork and the possible need for retaining walls.
<b>Property Acquisition Costs</b>	\$1,646,570.00
<b>Publicly Available Land</b>	This property is Vacant Government. This type of property is probably ideal if land acquisition time is critical.

**Notes:**

1. Refer to the graphics in Appendix C for a detailed view of each site.
2. NWI wetlands data used might not be 100% accurate and represent all current ground conditions. Future studies should verify data in the field.
3. The taxable land value found is shown in the table above. This value is also assumed to be the appraised or listed value of the property for cost estimating purposes.

**Central Broward East-West Transit Study**  
**Streetcar Storage and Maintenance Facility Location Study**

**Property Data**

**Site G - Taylor/7th North**

<b>Site Evaluation Factors</b>	
<b>Size and Configuration</b>	~ 5.1 acres (336' x 675')
<b>Roadway and Rail Access</b>	Access to the site can be achieved at NE 7th Ave.  The site is located approximately 2159' from the alignment.  A portion of vacant government property would need to be taken in order to accommodate an adequate yard lead to the facility. A spur track extending along Taylor Road would be the most direct approach.
<b>Operational Efficiency</b>	This candidate site is located near the Fort Lauderdale-Hollywood International Airport, south of I-595.  This site is somewhat centrally located between the downtown Wave and the Griffin Road Tri-Rail Station.  This site is within reasonable distance to the Wave facility, offering moderate travel times for Wave vehicles requiring heavy maintenance. It should also lessen deadheading for the CBT streetcar operation.
<b>Land Use Compatibility</b>	The property's current land use: Vacant Government  The property's current zoning: Airport-Airport  Re-zoning may be required.
<b>Community Impacts</b>	No residential properties are located within a 1000' of the site, reducing possible noise and vibration impacts.  A Nightclubs/Lounges area is located within the vicinity of the property.
<b>Natural Environmental Impacts</b>	5.1 acre Estuarine and Marine Wetland  The whole site is comprised of wetlands. Estuarine wetlands are regularly flooded. Mitigation measures would be required.  This site falls within an AE designated flood zone. AE designated flood zones are base floodplain areas, where base flood elevations are provided.
<b>Site Topography</b>	Several elevation contours appear at the site, therefore the ground is somewhat hilly which would result in more earthwork and the possible need for retaining walls.
<b>Property Acquisition Costs</b>	\$1,327,710.00
<b>Publicly Available Land</b>	This property is Vacant Government. This type of property is probably ideal if land acquisition time is critical.

**Notes:**

1. Refer to the graphics in Appendix C for a detailed view of each site.
2. NWI wetlands data used might not be 100% accurate and represent all current ground conditions. Future studies should verify data in the field.
3. The taxable land value found is shown in the table above. This value is also assumed to be the appraised or listed value of the property for cost estimating purposes.

**Central Broward East-West Transit Study**  
**Streetcar Storage and Maintenance Facility Location Study**

**Property Data**

**Site H - Eller/9th**

<b>Site Evaluation Factors</b>	
<b>Size and Configuration</b>	~ 10.2 acres (332' x 1346')
<b>Roadway and Rail Access</b>	Access to the site can be achieved from South Federal Highway (US-1).  The site is located approximately 347' from the alignment.  It appears that no additional properties would need to be taken in order to accommodate an adequate yard lead to the facility; however, US-1 is elevated going over I-595, therefore a yard lead constructed on an aerial structure may be required.
<b>Operational Efficiency</b>	This candidate site is located near the Fort Lauderdale-Hollywood International Airport, just north of I-595.  This location would be closer to the northern end of the proposed CBT streetcar alignment, and within reasonable proximity to the downtown Wave.  Because this site is within reasonable distance to the Wave facility, it would offer minimal travel times for Wave vehicles requiring heavy maintenance compared to other candidate sites. However, if the CBT streetcar alignment is extended to the SFEC, then deadheading may be an issue.
<b>Land Use Compatibility</b>	The property's current land use: Vacant Government  The property's current zoning: Airport-General Manufacturing and Industrial  No re-zoning appears to be required.
<b>Community Impacts</b>	No residential properties are located within a 1000' of the site, minimizing possible noise and vibration impacts.
<b>Natural Environmental Impacts</b>	0.58 acre Freshwater Forested Shrub/0.3 acre Freshwater Pond  The wetland is located at the eastern edge of the site. This wetland may be avoided with a good site design. Minimal to no mitigation measures would be necessary.  This site falls within an AE designated flood zone. AE designated flood zones are base floodplain areas, where base flood elevations are provided.
<b>Site Topography</b>	Only minimal elevation contours appear at the site, therefore the ground is flat for the most part which should help minimize earthwork and the need for retaining walls.
<b>Property Acquisition Costs</b>	\$3,369,300.00
<b>Publicly Available Land</b>	This property is Vacant Government. This type of property is probably ideal if land acquisition time is critical.

**Notes:**

1. Refer to the graphics in Appendix C for a detailed view of each site.
2. NWI wetlands data used might not be 100% accurate and represent all current ground conditions. Future studies should verify data in the field.
3. The taxable land value found is shown in the table above. This value is also assumed to be the appraised or listed value of the property for cost estimating purposes.

**Central Broward East-West Transit Study**  
**Streetcar Storage and Maintenance Facility Location Study**

**Property Data**

**Site I - Federal/32nd**

<b>Site Evaluation Factors</b>	
<b>Size and Configuration</b>	<p>~ 8.4 acres            (Non-geometric shape - see detailed map for exact dimensions.)            This site consists of two properties clustered together.</p>
<b>Roadway and Rail Access</b>	<p>Rail access to the site can be achieved from the signalized intersection at SE 30th Street. Highway vehicles can access the site by constructing a roadway north from Eller Drive.            The site is located approximately 205' from the alignment.            Additional properties may need to be taken in order to accommodate adequate yard leads to the facility. This will be reviewed in more detail during a later phase.</p>
<b>Operational Efficiency</b>	<p>This candidate site is located near the Fort Lauderdale-Hollywood International Airport, just north of I-595.            This location would be closer to the northern end of the proposed CBT streetcar alignment, and within reasonable proximity to the downtown Wave.            Because this site is within reasonable distance to the Wave facility, it would offer minimal travel times for Wave vehicles requiring heavy maintenance compared to other candidate sites. However, if the CBT streetcar alignment is extended to the SFEC, then deadheading may be an issue.</p>
<b>Land Use Compatibility</b>	<p>The property's current land use: Vacant Government            The property's current zoning: Airport-General Manufacturing and Industrial            No re-zoning appears to be required.</p>
<b>Community Impacts</b>	<p>No residential properties are located within a 1000' of the site, minimizing possible noise and vibration impacts.</p>
<b>Natural Environmental Impacts</b>	<p>0.06 acre Freshwater Forested Shrub            The wetland is located at the southeastern corner of the northern parcel of the site. This wetland may be avoided with a good site design. Minimal to no mitigation measures would be necessary.            This site falls within an AE designated flood zone. AE designated flood zones are base floodplain areas, where base flood elevations are provided.</p>
<b>Site Topography</b>	<p>Several elevation contours appear at the site, therefore the ground is somewhat hilly which would result in more earthwork and the possible need for retaining walls.</p>
<b>Property Acquisition Costs</b>	<p>\$2,783,220.00</p>
<b>Publicly Available Land</b>	<p>This property is Vacant Government. This type of property is probably ideal if land acquisition time is critical.</p>

**Notes:**

1. Refer to the graphics in Appendix C for a detailed view of each site.
2. NWI wetlands data used might not be 100% accurate and represent all current ground conditions. Future studies should verify data in the field.
3. The taxable land value found is shown in the table above. This value is also assumed to be the appraised or listed value of the property for cost estimating purposes.

**Central Broward East-West Transit Study**  
**Streetcar Storage and Maintenance Facility Location Study**

**Property Data**

**Site J - Federal/Taylor**

<b>Site Evaluation Factors</b>	
<b>Size and Configuration</b>	~ 7.7 acres (Non-geometric shape - see detailed map for exact dimensions.)
<b>Roadway and Rail Access</b>	Access to the site can be achieved from North Federal Highway (US-1) and/or Taylor Road.  The site is located approximately 255' from the alignment.  Portions of RoW and/or Vacant Government properties would need to be taken in order to accommodate adequate yard leads to the facility.
<b>Operational Efficiency</b>	This candidate site is located near the Fort Lauderdale-Hollywood International Airport, south of I-595.  This site is somewhat centrally located between the downtown Wave and the Griffin Road Tri-Rail Station.  This site is within reasonable distance to the Wave facility, offering moderate travel times for Wave vehicles requiring heavy maintenance. It should also lessen deadheading for the CBT streetcar operation.
<b>Land Use Compatibility</b>	The property's current land use: Vacant Government  The property's current zoning: Airport-Airport  Re-zoning may be required.
<b>Community Impacts</b>	No residential properties are located within a 1000' of the site, minimizing possible noise and vibration impacts.
<b>Natural Environmental Impacts</b>	Upland - No wetlands.  This site falls within AE (4.9 acres) and X (2.8 acres) designated flood zones. X designated flood zones are areas of minimal flooding, outside of the 100 and 500 year flood areas according to FEMA (FIRM) map data. AE designated flood zones are base floodplain areas, where base flood elevations are provided.
<b>Site Topography</b>	Several elevation contours appear at the site, therefore the ground is somewhat hilly which would result in more earthwork and the possible need for retaining walls.
<b>Property Acquisition Costs</b>	\$847,000.00
<b>Publicly Available Land</b>	This property is Vacant Government. This type of property is probably ideal if land acquisition time is critical.

**Notes:**

1. Refer to the graphics in Appendix C for a detailed view of each site.
2. NWI wetlands data used might not be 100% accurate and represent all current ground conditions. Future studies should verify data in the field.
3. The taxable land value found is shown in the table above. This value is also assumed to be the appraised or listed value of the property for cost estimating purposes.

**Appendix E: Streetcar Storage and Maintenance Facility -  
Conceptual Site Plans**

**WAREH**

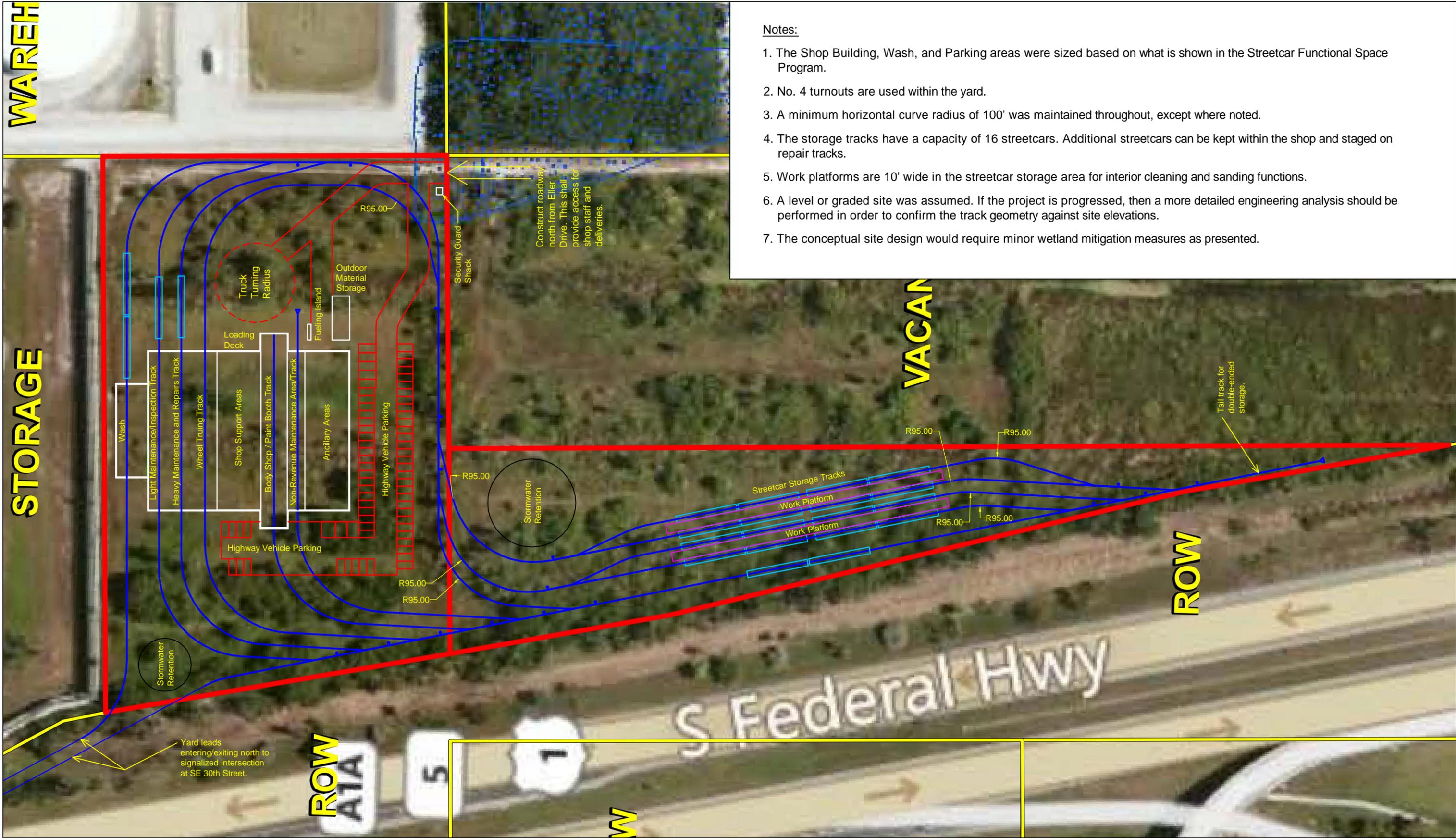
**STORAGE**

**VACAN**

**ROW**

**ROW**  
ATA

**W**



**Notes:**

1. The Shop Building, Wash, and Parking areas were sized based on what is shown in the Streetcar Functional Space Program.
2. No. 4 turnouts are used within the yard.
3. A minimum horizontal curve radius of 100' was maintained throughout, except where noted.
4. The storage tracks have a capacity of 16 streetcars. Additional streetcars can be kept within the shop and staged on repair tracks.
5. Work platforms are 10' wide in the streetcar storage area for interior cleaning and sanding functions.
6. A level or graded site was assumed. If the project is progressed, then a more detailed engineering analysis should be performed in order to confirm the track geometry against site elevations.
7. The conceptual site design would require minor wetland mitigation measures as presented.



**CENTRAL BROWARD EAST-WEST TRANSIT STUDY**  
 STREETCAR STORAGE AND MAINTENANCE FACILITY LOCATION STUDY  
 SITE I - CONCEPT PLAN  
 JANUARY 2013

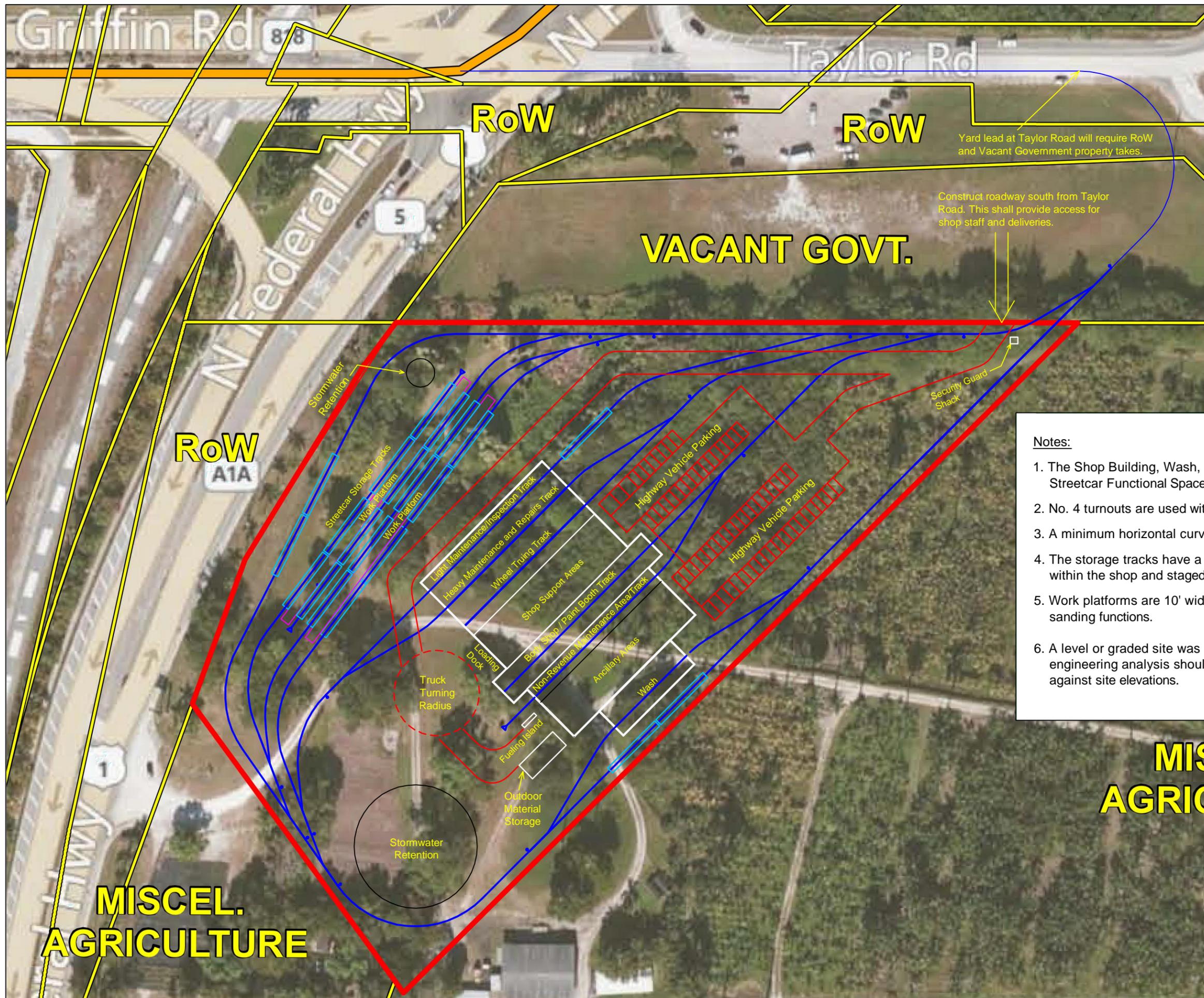


SCALE: 1" = 100'

**CENTRAL BROWARD  
EAST-WEST  
TRANSIT STUDY**

**STREETCAR STORAGE AND MAINTENANCE  
FACILITY LOCATION STUDY  
SITE J - CONCEPT PLAN  
JANUARY 2013**

SCALE: 1" = 100'



- Notes:**
1. The Shop Building, Wash, and Parking areas were sized based on what is shown in the Streetcar Functional Space Program.
  2. No. 4 turnouts are used within the yard.
  3. A minimum horizontal curve radius of 100' was maintained.
  4. The storage tracks have a capacity of 16 streetcars. Additional streetcars can be kept within the shop and staged on repair tracks.
  5. Work platforms are 10' wide in the streetcar storage area for interior cleaning and sanding functions.
  6. A level or graded site was assumed. If the project is progressed, then a more detailed engineering analysis should be performed in order to confirm the track geometry against site elevations.



**Appendix F: Preliminary Capital Cost Estimates -  
Streetcar Sites I and J**

# AECOM

Central Broward East-West Transit Study  
Storage and Maintenance Facility Location Study

MADE BY: JRH      DATE: 9/12/2012  
CHKD BY: KDS      DATE: 9/13/2012

Date Printed: 1/11/2013

## Site I Storage and Maintenance Facility

Description					Amount
30.03 Heavy Maintenance Facility					\$ 26,971,524
30.05 Yard and Yard Track					\$ 8,039,746
Construction Subtotal					\$ 35,011,271
<b>Professional Services</b>					
80.01 - Preliminary Engineering	3.00%				\$ 1,050,338
80.02 - Final Design	8.00%				\$ 2,800,902
80.03 - Project Management for Design and Construction	2.50%				\$ 875,282
80.04 - Construction Administration and Management	10.00%				\$ 3,501,127
80.05 - Professional Liability and Other Non-Construction Insurance	2.50%				\$ 875,282
80.06 - Legal Permits; Review Fees by Other Agencies	2.00%				\$ 700,225
80.07 - Testing, Investigation, Surveying	1.20%				\$ 420,135
80.08 - Start-Up	1.00%				\$ 350,113
<b>Professional Services Subtotal</b>	<b>30.20%</b>				<b>\$ 10,573,404</b>
<b>SUBTOTAL</b>					
					<b>\$ 45,584,674</b>
90.00 - Unallocated Contingency				5%	\$2,279,234
<b>SUBTOTAL</b>					<b>\$ 47,863,908</b>
Escalation Factor (3%) Annually (Based on Mid-Point of Construction)					
	2.50	Years from Today	3.0%		\$1,801,578
<b>GRAND TOTAL (Program Cost Estimate)</b>					<b>\$49,665,485</b>

### Cost Estimating Assumptions:

- Estimates are prepared using current dollars (2012)
- Adequate experienced craft labor is available
- Normal productivity rates as historically experienced are utilized
- Compatible trade agreements exist in the region
- No strike impacts will be experienced by the project
- There are sufficient experienced contractors available to perform said work
- Normal Metro Ft. Lauderdale area weather impacts to constructions schedule
- Existing state of the art construction technology will be utilized
- Assumes cooperation between stakeholders
- Temporary Power is included in the General Conditions
- Rail access to the yard facility is not included in the cost estimate

**AECOM**

Central Broward East-West Transit Study  
Storage and Maintenance Facility Location Study

MADE BY: JRH DATE: 9/12/2012  
CHKD BY: KDS DATE: 9/13/2012

Date Printed: 1/11/2013  
Site I Storage and Maintenance Facility

Most unit prices include labor, material & equipment

Description	Quantity	Units	Unit Price	Material		Labor		Average		Equipment			Total Cost	Comments
				Material Subtotal	Labor Productivity	Labor Hours	Labor Rate	Labor Cost	Equipment Productivity	Equipment Unit Rate	Equipment Subtotal			
<b>Division 02 00 00 Site Conditions</b>														
Assumes straight time														
Parking lot subbase	570	tons	\$ 49.00	\$ 27,930	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 27,930	6" deep subbase for parking	
Parking lot asphalt paving	22,500	sf	\$ 6.00	\$ 135,000	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 135,000		
Parking lot asphalt curbs	600	lf	\$ 8.00	\$ 4,800	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 4,800		
Parking lot line painting	2,200	lf	\$ 0.55	\$ 1,210	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 1,210		
Handicap markings	3	ea	\$ 250.00	\$ 750	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 750		
Exterior road and parking signage	20	ea	\$ 1,350.00	\$ 27,000	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 27,000		
Signage at facility entrance	1	ea	\$ 9,600.00	\$ 9,600	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 9,600		
Drainage inlets	12	ea	\$ 4,000.00	\$ 48,000	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 48,000		
Precast conc drainage piping	900	lf	\$ 80.00	\$ 72,000	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 72,000		
Stormwater retention	12,000	sf	\$ 4.44	\$ 53,333	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 53,333		
Manholes	12	ea	\$ 5,000.00	\$ 60,000	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 60,000		
Oil water separators	3	ea	\$ 40,000.00	\$ 120,000	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 120,000		
Electrical supply conduit to lighting	2,500	lf	\$ 20.00	\$ 50,000	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 50,000		
Electrical supply wiring to lighting and entry sign	8,250	lf	\$ 1.00	\$ 8,250	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 8,250		
Roadway lighting	8	ea	\$ 5,000.00	\$ 40,000	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 40,000		
Parking lot & street car storage track lighting	18	ea	\$ 4,500.00	\$ 81,000	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 81,000	One side of parking lot lighting fm bldg	
Roadway subbase	535	tons	\$ 49.00	\$ 26,215	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 26,215	6" deep subbase for roads	
Roadway concrete paving - 8" T	525	cy	\$ 350.00	\$ 183,750	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 183,750	Concrete all around building & roads	
Roadway curbs	1,200	lf	\$ 32.00	\$ 38,400	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 38,400		
Sidewalk base - 4" T	1,970	sf	\$ 1.25	\$ 2,462	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 2,462		
Sidewalk paving - 4" T	1,970	sf	\$ 4.71	\$ 9,269	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 9,269		
Loading dock paving	0	cy	\$ -	\$ -	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ -	part of roadway concrete	
Loading dock walls including footing	57	cy	\$ 350.00	\$ 19,950	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 19,950		
Yard work platforms (6" base)	320	cf	\$ 1.88	\$ 600	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 600	6	
Yard work platforms (6" conc)	320	cf	\$ 13.00	\$ 4,160	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 4,160		
Outdoor material storage- conc. pad (1000 sf)	0	cy	\$ -	\$ -	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ -	part of roadway concrete	
Waste handling /recycling - conc. pad (600 sf)	0	cy	\$ -	\$ -	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ -	part of roadway concrete	
Hazardous materials shed w/ conc. pad	300	sf	\$ 45.00	\$ 13,500	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 13,500		
Fuel island - conc. pad & island (1650 sf)	0	cy	\$ -	\$ -	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ -	part of roadway concrete	
Fuel island canopy - 1250 sf	0	sf	\$ -	\$ -	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ -	see steel breakdown	
Fuel island diesel fueling system w/ abvgrd tank	1	ea	\$ 120,000.00	\$ 120,000	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 120,000		
DEF abvgrd storage tank w/ dispensing	1	ea	\$ 150,000.00	\$ 150,000	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 150,000		
Landscaping	60,000	sf	\$ 2.00	\$ 120,000	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 120,000		
Fencing	4,000	lf	\$ 25.00	\$ 100,000	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 100,000		
Wetlands mitigation	0	allowance	\$ -	\$ -	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ -	no wetlands in this area	
Security guard shack (55 sf)	1	ea	\$ 15,000.00	\$ 15,000	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 15,000		
<b>Division 03 00 00 Concrete</b>														
Column footings	109	cy	\$ 600.00	\$ 65,333	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 65,333		
Column pedestals		cy	\$ -	\$ -	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ -	Included in foundations	
Wall footings	241	cy	\$ 450.00	\$ 108,300	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 108,300		
Pit walls	243	cy	\$ 750.00	\$ 182,000	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 182,000	Includes wheel truing pit	
Pit stairs	30	cy	\$ 700.00	\$ 21,000	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 21,000		
Stairs to second level	8	cy	\$ 700.00	\$ 5,600	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 5,600		
Slab on grade - 6" T	47,000	sf	\$ 7.41	\$ 348,148	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 348,148		
Slab on grade - 8" T	0	sf	\$ -	\$ -	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ -		
Acoustic Epic Deck with conc fill	26,000	sf	\$ 9.33	\$ 242,667	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 242,667		
Precast concrete walls - wash bay	3,912	sf	\$ 15.00	\$ 58,680	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 58,680	8" thick	
Precast concrete walls - remaining building	42,136	sf	\$ 15.00	\$ 632,040	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 632,040	8" thick	
Wheel truing pit concrete	0	cy	\$ -	\$ -	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ -	Included in Pit Concrete above	
			\$ -	\$ -	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ -		
			\$ -	\$ -	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ -		
			\$ -	\$ -	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ -		
<b>Division 04 00 00 Masonry</b>														

# AECOM

Central Broward East-West Transit Study  
Storage and Maintenance Facility Location Study

MADE BY: JRH  
CHKD BY: KDS

DATE: 9/12/2012  
DATE: 9/13/2012

Date Printed: 1/11/2013

## Site I Storage and Maintenance Facility

Most unit prices include labor, material & equipment

Description	Quantity	Units	Unit Price	Material	Labor	Average		Equipment		Equipment Subtotal	Total Cost	Comments	
				Subtotal	Productivity	Labor Hours	Labor Rate	Labor Cost	Productivity				Unit Rate
Glazed block walls - 4" + 4"	14,400	sf	\$ 32.50	\$ 468,000	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 468,000	
Regular block walls - 8" T	13,200	lf	\$ 19.60	\$ 258,720	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 258,720	
		lf	\$ 1.25	\$ -	0.060	-	\$0.00	\$ -	0.001	\$ 400	\$ -	\$ -	
		lf	\$ 0.25	\$ -	0.025	-	\$0.00	\$ -	0.001	\$ 400	\$ -	\$ -	
<b>Division 05 00 00 Steel</b>													
Structural Steel (material only)	546,000	lb	\$ 1.80	\$ 982,800	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 982,800	
Structural Steel (labor and equipment)	546,000	lb	\$ 1.12	\$ 612,539	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 612,539	
Building columns W10 49	0	lb	\$ 2.92	\$ -	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ -	part of structural steel
Beams between columns W18x50	0	lb	\$ 2.92	\$ -	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ -	part of structural steel
Cross bracing at ends of building	0	lb	\$ 2.92	\$ -	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ -	part of structural steel
Channels around overhead doors	0	lb	\$ 2.92	\$ -	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ -	part of miscellaneous steel
Lintels at 3' doors -interior	0	lb	\$ 2.92	\$ -	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ -	part of miscellaneous steel
Lintels at 6' doors -interior	0	lb	\$ 2.92	\$ -	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ -	part of miscellaneous steel
Lintels at 6' windows - interior	0	lb	\$ 2.92	\$ -	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ -	part of miscellaneous steel
Lintels at 9' windows - interior	0	lb	\$ 2.92	\$ -	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ -	part of miscellaneous steel
Framing steel for mezzanine @ cars	0	lb	\$ 2.92	\$ -	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ -	part of miscellaneous steel
Miscellaneous steel	115,000	lb	\$ 2.92	\$ 336,015	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 336,015	
Grating @ mezzanine @ cars	2,880	sf	\$ 10.00	\$ 28,800	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 28,800	
Railings at mezzanine @ cars	360	lf	\$ 35.00	\$ 12,600	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 12,600	
Stairs to mezzanines @ cars	22	lf	\$ 400.00	\$ 8,800	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 8,800	
Railings @ mezzanine	180	lf	\$ 35.00	\$ 6,300	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 6,300	
Metal stairs to mezzanine	42	lf	\$ 400.00	\$ 16,800	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 16,800	
Metal stairs to second floor	76	lf	\$ 400.00	\$ 30,400	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 30,400	
Roof joists	172,000	lb	\$ 2.92	\$ 502,561	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 502,561	
Columns to support tracks @ pits	60,000	lb	\$ 2.92	\$ 175,312	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 175,312	
Beams to support tracks @ pits	60,000	lb	\$ 2.92	\$ 175,312	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 175,312	
Pit edge channels	0	lb	\$ 2.92	\$ -	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ -	part of track pit steel
Acoustic Epic Deck mezzanine	26,000	sf	\$ 10.00	\$ 260,000	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 260,000	
Roof deck	47,000	sf	\$ 5.00	\$ 235,000	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 235,000	
Corrugated galv. roof deck @ fueling canopy	1,650	ea	\$ 8.00	\$ 13,200	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 13,200	
Columns @ fueling canopy (9 @ 16 feet high)	7,056	lb	\$ 2.92	\$ 20,617	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 20,617	
Beams @ fueling canopy (16 @ 20' L)	16,000	lb	\$ 2.92	\$ 46,750	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 46,750	
Fascia @ fueling canopy	320	sf	\$ 12.00	\$ 3,840	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 3,840	
			\$ -	\$ -	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ -	
			\$ -	\$ -	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ -	
<b>Division 06 00 00 Carpentry</b>													
Wood plates at roof edges	1200	lf	\$ 6.00	\$ 7,200	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 7,200	
		lf	\$ -	\$ -	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ -	
		lf	\$ -	\$ -	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ -	
<b>Division 07 00 00 Waterproofing</b>													
Waterproofing pit walls - liquid elastomeric	6,000	sf	\$ 6.00	\$ 36,000	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 36,000	
Insulation on roof - 4" T Polysocyanurate	47,000	sf	\$ 3.00	\$ 141,000	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 141,000	
Roof cover board - 1/2" Densboard	47,000	sf	\$ 2.00	\$ 94,000	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 94,000	
Fully adhered roof membrane Sarnafil - 80mil	47,000	sf	\$ 8.00	\$ 376,000	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 376,000	
Coping on precast wall panels	1,083	lf	\$ 12.00	\$ 12,996	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 12,996	
Sheet metal flashing @ bldg height differences	214	sf	\$ 10.00	\$ 2,140	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 2,140	
Sealants @ exterior walls, doors, windows	7,500	lf	\$ 2.50	\$ 18,750	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 18,750	
Sealants at interior walls, doors windows	9,000	lf	\$ 2.50	\$ 22,500	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 22,500	
Slab vapor barrier	47,000	sf	\$ 3.50	\$ 164,500	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 164,500	
					0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ -	
<b>Division 08 00 00 Doors &amp; Windows</b>													
3'x7' exterior HM doors and frames	16	ea	\$ 800.00	\$ 12,800	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 12,800	
3'x7' interior HM doors and frames	42	ea	\$ 700.00	\$ 29,400	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 29,400	
6'x7' exterior HM doors and frames	4	ea	\$ 1,500.00	\$ 6,000	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 6,000	
6'x7' interior HM doors and frames	5	ea	\$ 1,350.00	\$ 6,750	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 6,750	
6'x7' exterior aluminum doors and frames	4	ea	\$ 3,500.00	\$ 14,000	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 14,000	
Bi-parting doors - 12'Wx16'T	10	ea	\$ 26,000.00	\$ 260,000	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 260,000	

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Overhead doors - 10'Wx10'T	4	ea	\$ 4,200.00	\$ 16,800	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 16,800	
Windows - 4'H x 9'4"L (includes frame)	24	ea	\$ 2,200.00	\$ 52,800	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 52,800	
		ea	\$ -	\$ -	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ -	
		lf	\$ -	\$ -	0.600	-	\$0.00	\$ -	0.030	\$ 400	\$ -	\$ -	
<b>Division 09 00 00 Finishes</b>													
Resilient flooring - ECO rubber roll 1/4"	9,000	sf	\$ 8.75	\$ 78,750	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 78,750	
Rubber base	1,800	sf	\$ 4.35	\$ 7,830	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 7,830	
Retroplate conc. Floors	40,000	sf	\$ 2.75	\$ 110,000	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 110,000	
Paint ceiling of main space with Unibond paint	26,000	sf	\$ 0.88	\$ 22,880	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 22,880	
Paint Epic Deck Acoustic ceiling panels	26,000	sf	\$ 0.88	\$ 22,880	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 22,880	
Paint interior side of exterior walls	43,000	sf	\$ 0.95	\$ 40,850	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 40,850	
Paint interior masonry walls	26,400	sf	\$ 0.95	\$ 25,080	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 25,080	
Paint support steel	9,000	sf	\$ 0.88	\$ 7,920	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 7,920	
Paint steel stairs	2,100	sf	\$ 1.50	\$ 3,150	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 3,150	
Paint exterior doors and frames	2,210	sf	\$ 1.50	\$ 3,315	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 3,315	
Paint interior doors and frames	4,800	sf	\$ 1.50	\$ 7,200	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 7,200	
Paint HM window frames	340	lf	\$ 4.00	\$ 1,360	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 1,360	
Floor tile in toilets & entry to toilets	1,200	sf	\$ 25.00	\$ 30,000	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 30,000	
Paint overhead doors	5,760	sf	\$ 1.50	\$ 8,640	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 8,640	
Acoustic ceiling tile	16,000	sf	\$ 8.00	\$ 128,000	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 128,000	
Carpeting in offices	100	sy	\$ 40.00	\$ 4,000	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 4,000	
<b>Division 10 00 00 Specialties</b>													
Lockers - recycled plastic - 12" x 12"	40	ea	\$ 480.00	\$ 19,200	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 19,200	
Lockers - recycled plastic - 18" x 12"	40	ea	\$ 510.00	\$ 20,400	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 20,400	
Benches - wood - 9' wide	58	lf	\$ 30.00	\$ 1,740	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 1,740	
Toilet partitions - recycled plastic	128	lf	\$ 116.00	\$ 14,848	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 14,848	
Interior door signs w/ Braille	47	ea	\$ 180.00	\$ 8,460	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 8,460	
Numbers over car doors	10	ea	\$ 120.00	\$ 1,200	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 1,200	
Safety signs	60	ea	\$ 80.00	\$ 4,800	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 4,800	
Fire extinguishers	30	ea	\$ 200.00	\$ 6,000	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 6,000	
Fire extinguishers with cabinets	8	ea	\$ 300.00	\$ 2,400	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 2,400	
Kitchenette with cabinets above	2	ea	\$ 800.00	\$ 1,600	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 1,600	
Ladder to mezzanine	1	ea	\$ 4,000.00	\$ 4,000	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 4,000	
ladder to roof from mezzanine / second floor	2	ea	\$ 4,000.00	\$ 8,000	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 8,000	
Roof hatch	2	ea	\$ 3,500.00	\$ 7,000	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 7,000	
Toilet m access (16 toilet & 12 sink stations)	28	ea	\$ 900.00	\$ 25,200	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 25,200	
Toilet room grab bars - stainless steel	78	lf	\$ 55.00	\$ 4,290	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 4,290	
Sink counters - 5' long	8	ea	\$ 1,200.00	\$ 9,600	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 9,600	
Shower stalls	6	ea	\$ 2,300.00	\$ 13,800	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 13,800	
<b>Division 11 00 00 Equipment</b>													
Train wash equipment	1	ea	\$ 350,000.00	\$ 350,000	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 350,000	
Paint Booth	1	ea	\$ 500,000.00	\$ 500,000	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 500,000	Includes the car lifts
Recycling equipment	1	ea	\$ 35,000.00	\$ 35,000	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 35,000	
Water softening	1	ea	\$ 2,500.00	\$ 2,500	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 2,500	
Wheel truing equipment	1	ea	\$ 2,300,000.00	\$ 2,300,000	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 2,300,000	
Truck turntables	2	ea	\$ 100,000.00	\$ 200,000	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 200,000	
Portable jacks - 25 ton each	8	ea	\$ 25,000.00	\$ 200,000	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 200,000	
Parts storage racks	1	ls	\$ 200,000.00	\$ 200,000	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 200,000	
Forklifts	2	ea	\$ 35,000.00	\$ 70,000	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 70,000	
Sand dispensing system	1	ea	\$ 20,000.00	\$ 20,000	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 20,000	
Bridge crane - 5 ton	1	ea	\$ 75,000.00	\$ 75,000	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 75,000	
Body, Sheet Metal, Welding Shop equipment	1	ls	\$ 60,000.00	\$ 60,000	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 60,000	
Benches with vises	12	ea	\$ 2,750.00	\$ 33,000	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 33,000	
High pressure hot water equipment	1	ea	\$ 3,500.00	\$ 3,500	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 3,500	
Gen shop equip - drill press, grinder, press x 3	1	ls	\$ 15,000.00	\$ 15,000	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 15,000	

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			Unit Price	Material Subtotal	Labor Productivity	Labor Hours	Labor Rate	Labor Cost	Equipment Productivity	Equipment Unit Rate	Equipment Subtotal		
Liquid dispensing and and collection system	1	ls	\$ 150,000.00	\$ 150,000	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 150,000	
Air compressor system	1	ls	\$ 110,000.00	\$ 110,000	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 110,000	
		lf	\$ -	\$ -				\$ -			\$ -	\$ -	
<b>Division 12 00 00 Furnishings</b>													
		lf	\$ -	\$ -	0.600	-	\$0.00	\$ -	0.030	\$ 400	\$ -	\$ -	
		lf	\$ -	\$ -	0.600	-	\$0.00	\$ -	0.030	\$ 400	\$ -	\$ -	
		lf	\$ -	\$ -	0.600	-	\$0.00	\$ -	0.030	\$ 400	\$ -	\$ -	
		lf	\$ -	\$ -	0.600	-	\$0.00	\$ -	0.030	\$ 400	\$ -	\$ -	
		lf	\$ -	\$ -	0.600	-	\$0.00	\$ -	0.030	\$ 400	\$ -	\$ -	
<b>Division 13 00 00 Signals</b>													
		lf	\$ -	\$ -	0.600	-	\$0.00	\$ -	0.030	\$ 400	\$ -	\$ -	
		lf	\$ -	\$ -	0.600	-	\$0.00	\$ -	0.030	\$ 400	\$ -	\$ -	
		lf	\$ -	\$ -	0.600	-	\$0.00	\$ -	0.030	\$ 400	\$ -	\$ -	
		lf	\$ -	\$ -	0.600	-	\$0.00	\$ -	0.030	\$ 400	\$ -	\$ -	
<b>Division 14 00 00 Lifting Equipment</b>													
Freight Elevator for Mezzanine	1	ea	\$ 150,000.00	\$ 150,000	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 150,000	
Personnel Hydraulic Elevator	1	ea	\$ 230,000.00	\$ 230,000	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 230,000	
Loading Dock Lift	1	ea	\$ 20,000.00	\$ 20,000	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 20,000	
<b>Division 21 00 00 Sprinkler Systems</b>													
Wet Sprinkler System	47000	sf	\$ 4.00	\$ 188,000	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 188,000	
		lf	\$ -	\$ -	0.600	-	\$0.00	\$ -	0.030	\$ 400	\$ -	\$ -	
		lf	\$ -	\$ -	0.600	-	\$0.00	\$ -	0.030	\$ 400	\$ -	\$ -	
		lf	\$ -	\$ -	0.600	-	\$0.00	\$ -	0.030	\$ 400	\$ -	\$ -	
<b>Division 22 00 00 Plumbing</b>													
General Plumbing	47000	sf	\$ 15.00	\$ 705,000	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 705,000	
		lf	\$ -	\$ -	0.600	-	\$0.00	\$ -	0.030	\$ 400	\$ -	\$ -	
		lf	\$ -	\$ -	0.600	-	\$0.00	\$ -	0.030	\$ 400	\$ -	\$ -	
		lf	\$ -	\$ -	0.600	-	\$0.00	\$ -	0.030	\$ 400	\$ -	\$ -	
		lf	\$ -	\$ -	0.600	-	\$0.00	\$ -	0.030	\$ 400	\$ -	\$ -	
<b>Division 23 00 00 HVAC</b>													
General HVAC	73000	sf	\$ 20.00	\$ 1,460,000	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 1,460,000	Includes main garage & mezzanine
Paint Booth Ventilation	1	ea	\$ 80,000.00	\$ 80,000	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 80,000	
		lf	\$ -	\$ -	0.600	-	\$0.00	\$ -	0.030	\$ 400	\$ -	\$ -	
		ea	\$ -	\$ -	4.000	-	\$0.00	\$ -	0.250	\$ 400	\$ -	\$ -	
<b>Division 26 00 00 Electrical</b>													
General Electrical	73000	sf	\$ 16.00	\$ 1,168,000	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 1,168,000	Includes main garage & mezzanine
Stinger System inside Building	1	ea	\$ 700,000.00	\$ 700,000	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 700,000	
Shop Traction Power Station	1	ea	\$ 1,000,000.00	\$ 1,000,000	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 1,000,000	
<b>Division 27 00 00 Communications</b>													
Internet	1	ea	\$ 25,000.00	\$ 25,000	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 25,000	
Telephone	1	ea	\$ 25,000.00	\$ 25,000	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 25,000	
Transit System	1	ea	\$ 150,000.00	\$ 150,000	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 150,000	Includes fiber optic connections & control room
<b>Division 28 00 00 Security and Alarms</b>													
Building Cameras & Access Security	73000	sf	\$ 3.00	\$ 219,000	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 219,000	
		ea	\$ -	\$ -	4.000	-	\$0.00	\$ -	0.250	\$ 400	\$ -	\$ -	
		ea	\$ -	\$ -	4.000	-	\$0.00	\$ -	0.250	\$ 400	\$ -	\$ -	
		ea	\$ -	\$ -	4.000	-	\$0.00	\$ -	0.250	\$ 400	\$ -	\$ -	
		ea	\$ -	\$ -	4.000	-	\$0.00	\$ -	0.250	\$ 400	\$ -	\$ -	
<b>Division 31 00 00 Earthwork</b>													
Grading (2 ft deep over whole site)	17,296	cy	\$ 7.80	\$ 134,908	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 134,908	
		ea	\$ -	\$ -	4.000	-	\$0.00	\$ -	0.250	\$ 400	\$ -	\$ -	
		ea	\$ -	\$ -	4.000	-	\$0.00	\$ -	0.250	\$ 400	\$ -	\$ -	
		ea	\$ -	\$ -	4.000	-	\$0.00	\$ -	0.250	\$ 400	\$ -	\$ -	
<b>Division 32 00 00 Exterior Improvements</b>													

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		ea	\$ -	\$ -	4.000	-	\$0.00	\$ -	0.250	\$ 400	\$ -	\$ -	
		ea	\$ -	\$ -	4.000	-	\$0.00	\$ -	0.250	\$ 400	\$ -	\$ -	
		ea	\$ -	\$ -	4.000	-	\$0.00	\$ -	0.250	\$ 400	\$ -	\$ -	
		ea	\$ -	\$ -	4.000	-	\$0.00	\$ -	0.250	\$ 400	\$ -	\$ -	
<b>Division 33 00 00 Utilities</b>													
Water supply	280	lf	\$ 100.00	\$ 28,000	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 28,000	
Electrical supply conduit	250	lf	\$ 180.00	\$ 45,000	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 45,000	
Electrical supply cable	275	lf	\$ 172.80	\$ 47,520	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 47,520	
Sewage piping	1,800	lf	\$ 60.00	\$ 108,000	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 108,000	
<b>Division 34 00 00 Railwork</b>													
Crushed gravel subbase	2800	tons	\$ 49.00	\$ 137,200	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 137,200	6" gravel subbase for track area
Ballasted yard track - straight	3400	lf	\$ 250.00	\$ 850,000	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 850,000	
Ballasted yard track - curved (95' radius)	750	lf	\$ 260.00	\$ 195,000	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 195,000	
Ballasted yard track - curved (100' radius)	1730	lf	\$ 260.00	\$ 449,800	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 449,800	
Exterior track embedded @ crossings	120	lf	\$ 650.00	\$ 78,000	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 78,000	
Interior track - embedded	1117	lf	\$ 650.00	\$ 726,050	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 726,050	
Track stops	3	ea	\$ 40,000.00	\$ 120,000	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 120,000	
#4 yard turnouts	17	ea	\$ 150,000.00	\$ 2,550,000	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 2,550,000	
#6 yard turnouts	0	ea	\$ 180,000.00	\$ -	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ -	
Yard substation	1	ea	\$ 800,000.00	\$ 800,000	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 800,000	
OCS	7360	lf	\$ 180.00	\$ 1,324,800	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 1,324,800	Includes foundations, contact wire, poles & arms
Signals/Switch Machines	17	ea	\$ 30,000.00	\$ 510,000	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 510,000	
				\$27,876,620							\$ -	\$ 27,876,620	
Sales Tax		Sales Tax Rate	6%									\$ 669,039	
		Assume Material is	40%	of costs									
Subtotal												\$ 28,545,659	
Subcontracting Mark-Up		5%										\$ 499,549	
		Assume	35%	of the work is subcontracted									
Land Values												\$ 2,783,220	Appraised or listed value
Total Cost												\$ 31,828,428	
Allocated Contingency		10%										\$ 3,182,843	
Construction Subtotal												\$ 35,011,271	

# AECOM

Central Broward East-West Transit Study  
Storage and Maintenance Facility Location Study

MADE BY: JRH      DATE: 9/12/2012  
CHKD BY: KDS      DATE: 9/13/2012

Date Printed: 1/11/2013  
Site J Storage and Maintenance Facility

Description					Amount
30.03 Heavy Maintenance Facility					\$ 25,722,904
30.05 Yard and Yard Track					\$ 7,324,114
Construction Subtotal					\$ 33,047,019
<b>Professional Services</b>					
80.01 - Preliminary Engineering	3.00%				\$ 991,411
80.02 - Final Design	8.00%				\$ 2,643,761
80.03 - Project Management for Design and Construction	2.50%				\$ 826,175
80.04 - Construction Administration and Management	10.00%				\$ 3,304,702
80.05 - Professional Liability and Other Non-Construction Insurance	2.50%				\$ 826,175
80.06 - Legal Permits; Review Fees by Other Agencies	2.00%				\$ 660,940
80.07 - Testing, Investigation, Surveying	1.20%				\$ 396,564
80.08 - Start-Up	1.00%				\$ 330,470
<b>Professional Services Subtotal</b>					<b>\$ 9,980,200</b>
<b>SUBTOTAL</b>					<b>\$ 43,027,218</b>
90.00 - Unallocated Contingency				5%	\$2,151,361
<b>SUBTOTAL</b>					<b>\$ 45,178,579</b>
Escalation Factor (3%) Annually (Based on Mid-Point of Construction)	2.50	Years from Today	3.0%		\$1,700,503
<b>GRAND TOTAL (Program Cost Estimate)</b>					<b>\$46,879,082</b>

Cost Estimating Assumptions:

- Estimates are prepared using current dollars (2012)
- Adequate experienced craft labor is available
- Normal productivity rates as historically experienced are utilized
- Compatible trade agreements exist in the region
- No strike impacts will be experienced by the project
- There are sufficient experienced contractors available to perform said work
- Normal Metro Ft. Lauderdale area weather impacts to constructions schedule
- Existing state of the art construction technology will be utilized
- Assumes cooperation between stakeholders
- Temporary Power is included in the General Conditions
- Rail access to the yard facility is not included in the cost estimate

**AECOM**

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Description	Quantity	Units	Unit Price	Material Subtotal	Labor		Average Labor Rate	Labor Cost	Equipment			Total Cost	Comments
					Labor Productivity	Labor Hours			Equipment Productivity	Equipment Unit Rate	Equipment Subtotal		
Assumes straight time													
<b>Division 02 00 00 Site Conditions</b>													
Parking lot subbase	570	tons	\$ 49.00	\$ 27,930	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 27,930	6" deep subbase for parking
Parking lot asphalt paving	22,500	sf	\$ 13.00	\$ 292,500	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 292,500	
Parking lot asphalt curbs	710	lf	\$ 8.00	\$ 5,680	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 5,680	
Parking lot line painting	2,200	lf	\$ 0.55	\$ 1,210	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 1,210	
Handicap markings	3	ea	\$ 250.00	\$ 750	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 750	
Exterior road and parking signage	20	ea	\$ 1,350.00	\$ 27,000	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 27,000	
Signage at facility entrance	1	ea	\$ 9,600.00	\$ 9,600	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 9,600	
Drainage inlets	10	ea	\$ 4,000.00	\$ 40,000	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 40,000	
Precast conc drainage piping	10,000	lf	\$ 80.00	\$ 800,000	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 800,000	
Stormwater retention	17,700	sf	\$ 4.44	\$ 78,667	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 78,667	
Manholes	12	ea	\$ 5,000.00	\$ 60,000	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 60,000	
Oil water separators	3	ea	\$ 40,000.00	\$ 120,000	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 120,000	
Electrical supply conduit to lighting	2,000	lf	\$ 20.00	\$ 40,000	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 40,000	
Electrical supply wiring to lighting and entry sign	2,000	lf	\$ 1.00	\$ 2,000	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 2,000	
Roadway lighting	10	ea	\$ 5,000.00	\$ 50,000	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 50,000	
Parking lot & street car storage track lighting	12	ea	\$ 4,500.00	\$ 54,000	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 54,000	One side of parking lot lighting fm bldg
Roadway subbase	535	tons	\$ 49.00	\$ 26,215	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 26,215	6" deep subbase for roads
Roadway concrete paving - 8" T	1,260	cy	\$ 350.00	\$ 441,000	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 441,000	
Roadway curbs	2,100	lf	\$ 32.00	\$ 67,200	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 67,200	
Sidewalk base - 4" T	1,212	sf	\$ 1.25	\$ 1,515	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 1,515	
Sidewalk paving - 4" T	1,212	sf	\$ 4.71	\$ 5,704	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 5,704	
Loading dock paving	0	cy	\$ -	\$ -	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ -	part of roadway concrete
Loading dock walls including footing	57	cy	\$ 350.00	\$ 19,950	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 19,950	
Yard work platforms (6" base)	320	cf	\$ 1.88	\$ 600	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 600	
Yard work platforms (6" conc)	320	cf	\$ 13.00	\$ 4,160	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 4,160	
Outdoor material storage- conc. pad (1000 sf)	0	cy	\$ -	\$ -	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ -	part of roadway concrete
Waste handling /recycling - conc. pad (600 sf)	0	cy	\$ -	\$ -	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ -	part of roadway concrete
Hazardous materials shed w/ conc. pad	300	sf	\$ 45.00	\$ 13,500	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 13,500	
Fuel island - conc. pad & island (1650 sf)	0	cy	\$ -	\$ -	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ -	part of roadway concrete
Fuel island canopy - 1250 sf	0	sf	\$ -	\$ -	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ -	see steel breakdown
Fuel island diesel fueling system w/ abvgrd tank	1	ea	\$ 120,000.00	\$ 120,000	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 120,000	
DEF abvgrd storage tank w/ dispensing	1	ea	\$ 150,000.00	\$ 150,000	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 150,000	
Landscaping	30,800	sf	\$ 2.00	\$ 61,600	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 61,600	
Fencing	2,560	lf	\$ 25.00	\$ 64,000	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 64,000	
Wetlands mitigation	0	allowance	\$ -	\$ -	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ -	no wetlands in this area
Security guard shack (55 sf)	1	ea	\$ 15,000.00	\$ 15,000	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 15,000	
<b>Division 03 00 00 Concrete</b>													
Column footings	109	cy	\$ 600.00	\$ 65,333	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 65,333	
Column pedestals		cy	\$ -	\$ -	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ -	
Wall footings	241	cy	\$ 450.00	\$ 108,300	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 108,300	
Pit walls	243	cy	\$ 750.00	\$ 182,000	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 182,000	
Pit stairs	30	cy	\$ 700.00	\$ 21,000	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 21,000	
Stairs to second level	8	cy	\$ 700.00	\$ 5,600	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 5,600	
Slab on grade - 6" T	47,000	sf	\$ 7.41	\$ 348,148	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 348,148	
Slab on grade - 8" T	0	sf	\$ -	\$ -	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ -	
Acoustic Epic Deck with conc fill	26,000	sf	\$ 9.33	\$ 242,667	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 242,667	
Precast concrete walls - wash bay	3,912	sf	\$ 15.00	\$ 58,680	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 58,680	
Precast concrete walls - remaining building	42,136	sf	\$ 15.00	\$ 632,040	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 632,040	
Wheel truing pit concrete	0	cy	\$ -	\$ -	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ -	
			\$ -	\$ -								\$ -	
			\$ -	\$ -								\$ -	
			\$ -	\$ -								\$ -	
			\$ -	\$ -								\$ -	
<b>Division 04 00 00 Masonry</b>													
Glazed block walls - 4" + 4"	14,400	sf	\$ 32.50	\$ 468,000	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 468,000	

**AECOM**

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Storage and Maintenance Facility Location Study

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Date Printed: 1/11/2013  
Site J Storage and Maintenance Facility

Description	Quantity	Units	Unit Price	Material		Labor		Average Labor Rate	Labor Cost	Equipment			Total Cost	Comments
				Material Subtotal	Labor Productivity	Labor Hours	Equipment Productivity			Equipment Unit Rate	Equipment Subtotal			
Regular block walls - 8" T	13,200	lf	\$ 19.60	\$ 258,720	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 258,720		
		lf	\$ 1.25	\$ -	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ -		
		lf	\$ 0.25	\$ -	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ -		
<b>Division 05 00 00 Steel</b>														
Structural Steel (material only)	546,000	lb	\$ 1.80	\$ 982,800	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 982,800		
Structural Steel (labor and equipment)	546,000	lb	\$ 1.12	\$ 612,539	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 612,539		
Building columns W10 49		0 lb	\$ 2.92	\$ -	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ -	part of structural steel	
Beams between columns W18x50		0 lb	\$ 2.92	\$ -	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ -	part of structural steel	
Cross bracing at ends of building		0 lb	\$ 2.92	\$ -	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ -	part of structural steel	
Channels around overhead doors		0 lb	\$ 2.92	\$ -	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ -	part of miscellaneous steel	
Lintels at 3' doors -interior		0 lb	\$ 2.92	\$ -	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ -	part of miscellaneous steel	
Lintels at 6' doors -interior		0 lb	\$ 2.92	\$ -	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ -	part of miscellaneous steel	
Lintels at 6' windows - interior		0 lb	\$ 2.92	\$ -	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ -	part of miscellaneous steel	
Lintels at 9' windows - interior		0 lb	\$ 2.92	\$ -	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ -	part of miscellaneous steel	
Framing steel for mezzanine @ cars		0 lb	\$ 2.92	\$ -	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ -	part of miscellaneous steel	
Miscellaneous steel	115,000	lb	\$ 2.92	\$ 336,015	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 336,015		
Grating @ mezzanine @ cars	2,880	sf	\$ 10.00	\$ 28,800	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 28,800		
Railings at mezzanine @ cars	360	lf	\$ 35.00	\$ 12,600	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 12,600		
Stairs to mezzanines @ cars	22	lf	\$ 400.00	\$ 8,800	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 8,800		
Railings @ mezzanine	180	lf	\$ 35.00	\$ 6,300	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 6,300		
Metal stairs to mezzanine	42	lf	\$ 400.00	\$ 16,800	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 16,800		
Metal stairs to second floor	76	lf	\$ 400.00	\$ 30,400	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 30,400		
Roof joists	172,000	lb	\$ 2.92	\$ 502,561	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 502,561		
Columns to support tracks @ pits	60,000	lb	\$ 2.92	\$ 175,312	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 175,312		
Beams to support tracks @ pits	60,000	lb	\$ 2.92	\$ 175,312	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 175,312		
Pit edge channels		0 lb	\$ 2.92	\$ -	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ -	part of track pit steel	
Acoustic Epic Deck mezzanine	26,000	sf	\$ 10.00	\$ 260,000	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 260,000		
Roof deck	47,000	sf	\$ 5.00	\$ 235,000	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 235,000		
Corrugated galv. roof deck @ fueling canopy	1,650	ea	\$ 8.00	\$ 13,200	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 13,200		
Columns @ fueling canopy (9 @ 16 feet high)	7,056	lb	\$ 2.92	\$ 20,617	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 20,617		
Beams @ fueling canopy (16 @ 20' L)	16,000	lb	\$ 2.92	\$ 46,750	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 46,750		
Fascia @ fueling canopy	320	sf	\$ 12.00	\$ 3,840	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 3,840		
			\$ -	\$ -	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ -		
			\$ -	\$ -	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ -		
<b>Division 06 00 00 Carpentry</b>														
Wood plates at roof edges	1200	lf	\$ 6.00	\$ 7,200	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 7,200		
		lf	\$ -	\$ -	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ -		
		lf	\$ -	\$ -	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ -		
<b>Division 07 00 00 Waterproofing</b>														
Waterproofing pit walls - liquid elastomeric	6,000	sf	\$ 6.00	\$ 36,000	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 36,000		
Insulation on roof - 4" T Polyisocyanurate	47,000	sf	\$ 3.00	\$ 141,000	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 141,000		
Roof cover board - 1/2" Densboard	47,000	sf	\$ 2.00	\$ 94,000	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 94,000		
Fully adhered roof membrane Samafil - 80mil	47,000	sf	\$ 8.00	\$ 376,000	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 376,000		
Coping on precast wall panels	1,083	lf	\$ 12.00	\$ 12,996	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 12,996		
Sheet metal flashing @ bldg height differences	214	sf	\$ 10.00	\$ 2,140	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 2,140		
Sealants @ exterior walls, doors, windows	7,500	lf	\$ 2.50	\$ 18,750	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 18,750		
Sealants at interior walls, doors windows	9,000	lf	\$ 2.50	\$ 22,500	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 22,500		
Slab vapor barrier	47,000	sf	\$ 3.50	\$ 164,500	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 164,500		
<b>Division 08 00 00 Doors &amp; Windows</b>														
3'x7' exterior HM doors and frames	16	ea	\$ 800.00	\$ 12,800	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 12,800		
3'x7' interior HM doors and frames	42	ea	\$ 700.00	\$ 29,400	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 29,400		
6'x7' exterior HM doors and frames	4	ea	\$ 1,500.00	\$ 6,000	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 6,000		
6'x7' interior HM doors and frames	5	ea	\$ 1,350.00	\$ 6,750	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 6,750		
6'x7' exterior aluminum doors and frames	4	ea	\$ 3,500.00	\$ 14,000	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 14,000		
Bi-parting doors - 12'Wx16'T	10	ea	\$ 26,000.00	\$ 260,000	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 260,000		
Overhead doors - 10'Wx10'T	4	ea	\$ 4,200.00	\$ 16,800	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 16,800		
Windows - 4'H x 9'4"L (includes frame)	24	ea	\$ 2,200.00	\$ 52,800	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 52,800		

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					Labor Productivity	Labor Hours			Equipment Productivity	Equipment Unit Rate	Equipment Subtotal		
		ea	\$ -	\$ -	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ -	
		lf	\$ -	\$ -	0.600	-	\$0.00	\$ -	0.030	\$ 400	\$ -	\$ -	
<b>Division 09 00 00 Finishes</b>													
Resilient flooring - ECO rubber roll 1/4"	9,000	sf	\$ 8.75	\$ 78,750	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 78,750	
Rubber base	1,800	sf	\$ 4.35	\$ 7,830	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 7,830	
Retroplate conc. Floors	40,000	sf	\$ 2.75	\$ 110,000	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 110,000	
Paint ceiling of main space with Unibond paint	26,000	sf	\$ 0.88	\$ 22,880	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 22,880	
Paint Epic Deck Acoustic ceiling panels	26,000	sf	\$ 0.88	\$ 22,880	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 22,880	
Paint interior side of exterior walls	43,000	sf	\$ 0.95	\$ 40,850	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 40,850	
Paint interior masonry walls	26,400	sf	\$ 0.95	\$ 25,080	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 25,080	
Paint support steel	9,000	sf	\$ 0.88	\$ 7,920	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 7,920	
Paint steel stairs	2,100	sf	\$ 1.50	\$ 3,150	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 3,150	
Paint exterior doors and frames	2,210	sf	\$ 1.50	\$ 3,315	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 3,315	
Paint interior doors and frames	4,800	sf	\$ 1.50	\$ 7,200	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 7,200	
Paint HM window frames	340	lf	\$ 4.00	\$ 1,360	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 1,360	
Floor tile in toilets & entry to toilets	1,200	sf	\$ 25.00	\$ 30,000	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 30,000	
Paint overhead doors	5,760	sf	\$ 1.50	\$ 8,640	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 8,640	
Acoustic ceiling tile	16,000	sf	\$ 8.00	\$ 128,000	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 128,000	
Carpeting in offices	100	sy	\$ 40.00	\$ 4,000	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 4,000	
<b>Division 10 00 00 Specialties</b>													
Lockers - recycled plastic - 12" x 12"	40	ea	\$ 480.00	\$ 19,200	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 19,200	
Lockers - recycled plastic - 18" x 12"	40	ea	\$ 510.00	\$ 20,400	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 20,400	
Benches - wood - 9" wide	58	lf	\$ 30.00	\$ 1,740	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 1,740	
Toilet partitions - recycled plastic	128	lf	\$ 116.00	\$ 14,848	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 14,848	
Interior door signs w/ Braille	47	ea	\$ 180.00	\$ 8,460	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 8,460	
Numbers over car doors	10	ea	\$ 120.00	\$ 1,200	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 1,200	
Safety signs	60	ea	\$ 80.00	\$ 4,800	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 4,800	
Fire extinguishers	30	ea	\$ 200.00	\$ 6,000	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 6,000	
Fire extinguishers with cabinets	8	ea	\$ 300.00	\$ 2,400	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 2,400	
Kitchenette with cabinets above	2	ea	\$ 800.00	\$ 1,600	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 1,600	
Ladder to mezzanine	1	ea	\$ 4,000.00	\$ 4,000	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 4,000	
ladder to roof from mezzanine / second floor	2	ea	\$ 4,000.00	\$ 8,000	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 8,000	
Roof hatch	2	ea	\$ 3,500.00	\$ 7,000	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 7,000	
Toilet m access (16 toilet & 12 sink stations)	28	ea	\$ 900.00	\$ 25,200	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 25,200	
Toilet room grab bars - stainless steel	78	lf	\$ 55.00	\$ 4,290	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 4,290	
Sink counters - 5' long	8	ea	\$ 1,200.00	\$ 9,600	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 9,600	
Shower stalls	6	ea	\$ 2,300.00	\$ 13,800	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 13,800	
<b>Division 11 00 00 Equipment</b>													
Train wash equipment	1	ea	\$ 350,000.00	\$ 350,000	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 350,000	
Paint Booth	1	ea	\$ 500,000.00	\$ 500,000	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 500,000	Includes the car lifts
Recycling equipment	1	ea	\$ 35,000.00	\$ 35,000	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 35,000	
Water softening	1	ea	\$ 2,500.00	\$ 2,500	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 2,500	
Wheel truing equipment	1	ea	\$ 2,300,000.00	\$ 2,300,000	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 2,300,000	
Truck turntables	2	ea	\$ 100,000.00	\$ 200,000	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 200,000	
Portable jacks - 25 ton each	8	ea	\$ 25,000.00	\$ 200,000	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 200,000	
Parts storage racks	1	ls	\$ 200,000.00	\$ 200,000	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 200,000	
Forklifts	2	ea	\$ 35,000.00	\$ 70,000	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 70,000	
Sand dispensing system	1	ea	\$ 20,000.00	\$ 20,000	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 20,000	
Bridge crane - 5 ton	1	ea	\$ 75,000.00	\$ 75,000	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 75,000	
Body, Sheet Metal, Welding Shop equipment	1	ls	\$ 60,000.00	\$ 60,000	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 60,000	
Benches with vises	12	ea	\$ 2,750.00	\$ 33,000	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 33,000	
High pressure hot water equipment	1	ea	\$ 3,500.00	\$ 3,500	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 3,500	
Gen shop equip - drill press, grinder, press x 3	1	ls	\$ 15,000.00	\$ 15,000	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 15,000	
Liquid dispensing and and collection system	1	ls	\$ 150,000.00	\$ 150,000	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 150,000	
Air compressor system	1	ls	\$ 110,000.00	\$ 110,000	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 110,000	
		lf	\$ -	\$ -	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ -	

**AECOM**

Central Broward East-West Transit Study  
Storage and Maintenance Facility Location Study

MADE BY: JRH DATE: 9/12/2012  
CHKD BY: KDS DATE: 9/13/2012

Date Printed: 1/11/2013  
Site J Storage and Maintenance Facility

Description	Quantity	Units	Unit Price	Material Subtotal	Labor		Average Labor Rate	Labor Cost	Equipment			Total Cost	Comments
					Labor Productivity	Labor Hours			Equipment Productivity	Equipment Unit Rate	Equipment Subtotal		
<b>Division 12 00 00 Furnishings</b>													
		lf	\$ -	\$ -	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ -	
		lf	\$ -	\$ -	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ -	
		lf	\$ -	\$ -	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ -	
		lf	\$ -	\$ -	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ -	
		lf	\$ -	\$ -	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ -	
<b>Division 13 00 00 Signals</b>													
		lf	\$ -	\$ -	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ -	
		lf	\$ -	\$ -	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ -	
		lf	\$ -	\$ -	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ -	
		lf	\$ -	\$ -	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ -	
<b>Division 14 00 00 Lifting Equipment</b>													
Freight Elevator for Mezzanine	1	ea	\$ 150,000.00	\$ 150,000	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 150,000	
Personnel Hydraulic Elevator	1	ea	\$ 230,000.00	\$ 230,000	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 230,000	
Loading Dock Lift	1	ea	\$ 20,000.00	\$ 20,000	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 20,000	
<b>Division 21 00 00 Sprinkler Systems</b>													
Wet Sprinkler System	47000	sf	\$ 4.00	\$ 188,000	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 188,000	
		lf	\$ -	\$ -	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ -	
		lf	\$ -	\$ -	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ -	
		lf	\$ -	\$ -	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ -	
<b>Division 22 00 00 Plumbing</b>													
General Plumbing	47000	sf	\$ 15.00	\$ 705,000	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 705,000	
		lf	\$ -	\$ -	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ -	
		lf	\$ -	\$ -	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ -	
		lf	\$ -	\$ -	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ -	
		lf	\$ -	\$ -	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ -	
<b>Division 23 00 00 HVAC</b>													
General HVAC	73000	sf	\$ 20.00	\$ 1,460,000	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 1,460,000	
Paint Booth Ventilation	1	ea	\$ 80,000.00	\$ 80,000	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 80,000	
		lf	\$ -	\$ -	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ -	
		ea	\$ -	\$ -	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ -	
<b>Division 26 00 00 Electrical</b>													
General Electrical	73000	sf	\$ 16.00	\$ 1,168,000	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 1,168,000	
Stinger System inside Building	1	ea	\$ 700,000.00	\$ 700,000	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 700,000	
Shop Traction Power Station	1	ea	\$ 1,000,000.00	\$ 1,000,000	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 1,000,000	
<b>Division 27 00 00 Communications</b>													
Internet	1	ea	\$ 25,000.00	\$ 25,000	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 25,000	
Telephone	1	ea	\$ 25,000.00	\$ 25,000	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 25,000	
Transit System	1	ea	\$ 150,000.00	\$ 150,000	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 150,000	
<b>Division 28 00 00 Security and Alarms</b>													
Building Cameras & Access Security	73000	sf	\$ 3.00	\$ 219,000	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 219,000	
		ea	\$ -	\$ -	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ -	
		ea	\$ -	\$ -	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ -	
		ea	\$ -	\$ -	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ -	
		ea	\$ -	\$ -	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ -	
<b>Division 31 00 00 Earthwork</b>													
Grading (2 ft deep over whole site)	16,626	cy	\$ 7.80	\$ 129,682	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 129,682	
		ea	\$ -	\$ -	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ -	
		ea	\$ -	\$ -	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ -	
		ea	\$ -	\$ -	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ -	
<b>Division 32 00 00 Exterior Improvements</b>													
		ea	\$ -	\$ -	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ -	
		ea	\$ -	\$ -	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ -	
		ea	\$ -	\$ -	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ -	
		ea	\$ -	\$ -	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ -	
<b>Division 33 00 00 Utilities</b>													

**AECOM**

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Storage and Maintenance Facility Location Study

MADE BY: JRH DATE: 9/12/2012  
CHKD BY: KDS DATE: 9/13/2012

Date Printed: 1/11/2013  
Site J Storage and Maintenance Facility

Description	Quantity	Units	Unit Price	Material Subtotal	Labor		Average Labor Rate	Labor Cost	Equipment			Total Cost	Comments
					Productivity	Hours			Equipment Productivity	Equipment Unit Rate	Equipment Subtotal		
Electrical supply conduit	450	lf	\$ 180.00	\$ 81,000	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 81,000	
Electrical supply cable	495	lf	\$ 172.80	\$ 85,536	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 85,536	
Water supply	450	lf	\$ 100.00	\$ 45,000	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 45,000	
Sewage piping	1,800	lf	\$ 60.00	\$ 108,000	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 108,000	
<b>Division 34 00 00 Railroad</b>													
Crushed gravel subbase	2600	tons	\$ 49.00	\$ 127,400	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 127,400	6" gravel subbase for track area
Ballasted yard track - straight	3240	lf	\$ 250.00	\$ 810,000	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 810,000	
Ballasted yard track - curved (95' radius)	0	lf	\$ 260.00	\$ -	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ -	
Ballasted yard track - curved (100' radius)	1160	lf	\$ 260.00	\$ 301,600	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 301,600	
Exterior track embedded @ crossings	300	lf	\$ 650.00	\$ 195,000	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 195,000	
Interior track - embedded	1117	lf	\$ 650.00	\$ 726,050	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 726,050	
Track stops	5	ea	\$ 40,000.00	\$ 200,000	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 200,000	
#4 yard turnouts	16	ea	\$ 150,000.00	\$ 2,400,000	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 2,400,000	
#6 yard turnouts	0	ea	\$ 180,000.00	\$ -	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ -	
Yard substation	1	ea	\$ 800,000.00	\$ 800,000	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 800,000	
OCS	5980	lf	\$ 180.00	\$ 1,076,400	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 1,076,400	Includes foundations, contact wire, poles & arms
Signals/Switch Machines	16	ea	\$ 30,000.00	\$ 480,000	0.000	-	\$0.00	\$ -	0.000	\$ 400	\$ -	\$ 480,000	
				\$ 28,395,611		-						\$ 28,012,111	
Sales Tax	Sales Tax Rate		6%									\$ 681,495	
	Assume Material is		40%	of costs									
Subtotal												\$ 28,693,606	
Subcontracting Mark-Up	5%											\$ 502,138	
	Assume	35%	of the work is subcontracted										
Land Values												\$ 847,000	Appraised or listed value
Total Cost												\$ 30,042,744	
Allocated Contingency	10%											\$ 3,004,275	
Construction Subtotal												\$ 33,047,019	