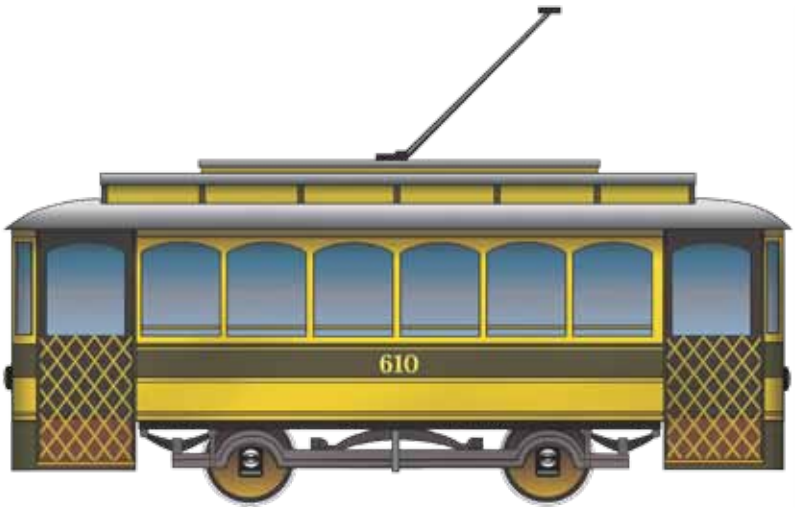
OPERATION BOOTSTRAP



Penetrating Petersburg

Restoring the Petersburg Electric Railway and the Electric Building

By Marvin Broyhill
Draft 104
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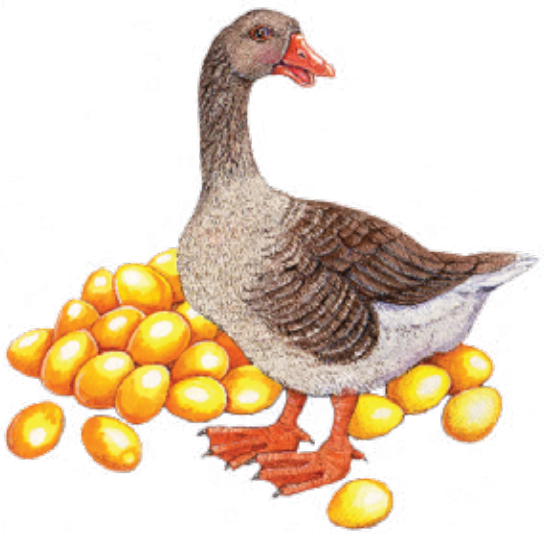
A PDF of this document and related ones
may be downloaded from Petersburg-Parks.com



Petersburg Parks - the goose
that lays the golden eggs.

Introduction

The entire purpose of *Operation Bootstrap* is to bring large numbers of people into downtown Petersburg to shop and dine. The Petersburg Parks will bring them into the park complex. The challenge is to funnel them from Old Towne up the Sycamore Street hill.

The above postcard looks north on Sycamore Street from Washington Street. The car in the foreground suggests this photo was taken in the mid 1920s.

The Atlantic Coast Line Railroad (formerly Petersburg Railroad) terminal was on the other side of Washington Street. The crowds dramatically demonstrate the impact of the railroad on the city. The Petersburg Parks will be a big step toward recreating such a dynamic retail economy.

The problem is that visitors have parked their cars within the Petersburg Parks complex and, even if that were not the case, there is insufficient downtown parking to accommodate a large number of cars. Overcoming this requires a downtown transportation system. This can be provided by the Petersburg Electric Railroad, just as it did a century ago.

The former Richmond and Petersburg Electric Railroad terminal would be restored to its original function and electric streetcars would be put back into service. This accomplishes the following goals:

(1) It provides an easy and convenient way to get visitors up the Sycamore Street hill.
(2) It provides the Petersburg Parks with another attraction.
(3) It honors a very unique facet of the city's history, that of the being the first city in the entire world to charter a modern interurban transportation system,
(4) It makes sensible use of a building that has been vacant for over a half century.
(5) It provides Petersburg Parks employees with an easy way to get back and forth to work.
(6) It creates jobs that do not require special skills.
(7) It can become a profit center for the City of Petersburg.

A Brief History

Omnibus

Richmond horse-drawn streetcar

The first interurban transportation was provided by horse-drawn coaches. Since larger passenger-carrying capacity was needed, the omnibus was invented. These were the horse-drawn predecessors of the modern bus. In the late 1830s, the Petersburg Railroad began used them to shuttle passengers back and forth between its station on Washington Street and the two railroad stations (City Point, and Richmond and Petersburg) on River Street.

Prior to the Civil War, Richmond had a public omnibus service that ran from one end of the city to the other. Although it provided needed transportation, ruts, bumps and mud resulted in slow, uncomfortable trips. The Richmond Railway Company was chartered on March 29, 1860 to run horse-powered street railways. New York City had them as early as 1831, so it was a well-proven technology.

George Beadle came to Petersburg from Syracuse, New York and became interested in providing such a service. The Common Council of the City of Petersburg provided him with a charter on November 3, 1882. Since it was to operate within the city, no state charter was necessary. Service began in August 1883 with six horse-drawn cars. Contemporary accounts state that the property values along the route increased significantly.

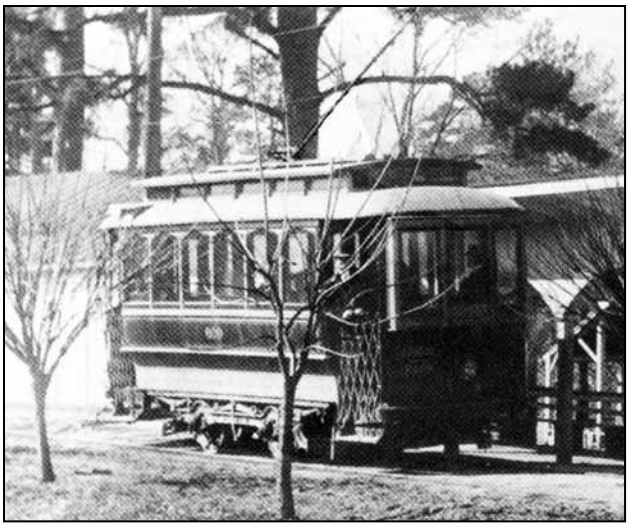
The City of Petersburg passed another ordnance on March 1, 1886. It permitted Beadle to electrify his streetcars.

Petersburg was the first city in the entire world to charter a modern (non-horse-drawn) interurban transportation system.

This was truly remarkable as the technology had not yet been developed. However such forward thinking was not new for the city council. It had the route for the Petersburg Railroad surveyed before the first steam-powered railroad even began scheduled service.

Nearby Richmond was not to be outdone. Two New York businessmen began forming a corporation, then visited Thomas Edison in Menlo Park, New Jersey and asked him to design and build an electric streetcar system. Edison was too busy with his electric light bulb so he referred them to Frank Julian Sprague, who had been working on the technology. The businessmen entered into a contract with Sprague in May 1887 that provided for an extensive system. In June, they received a charter from the city. The Richmond Union Passenger Railway Company began operations on January 9, 1888. It was the world's first modern interurban transportation system.

Frank Julian Sprague

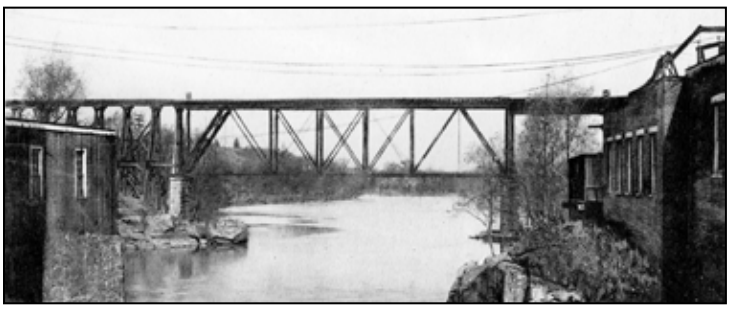


Petersburg Car 610 at the Ferndale Loop

Breadle began to electrify the Petersburg Street Railroad in the spring of 1892. It was to have started with ten new cars - six open and four closed; each was to seat 45 people. The four closed cars never arrived so four of the horse cars were equipped with single 30 horsepower motor trucks. Petersburg's first electric streetcar ran on July 18, 1892 and on August 8th a service was run from the River Street car barn to the turntable at West End Park. The round trip of 4.68 miles took 45 minutes. There were many problems with the Halifax line and Breadle couldn't pay the bills. That forced the company into receivership, but it continued operations.

Interurban car of 1901

On February 9, 1902, the first car of the new Richmond and Petersburg Railroad completed its run from Manchester to Petersburg. The trip took an hour and 15 minutes. It was met by hundred of people who lined Old Street. An extra 5-cent fare was charged for a transfer to the city lines. The cars made a loop on Sycamore, Bollingbrook 2nd, River and back to Old Street, back in the opposite direction.



The Interurban Railroad crossed the Appomattox River on its own bridge. The piers are still in place, just north of the Peter Jones Trading Post.

Interurban Electric Railway Bridge

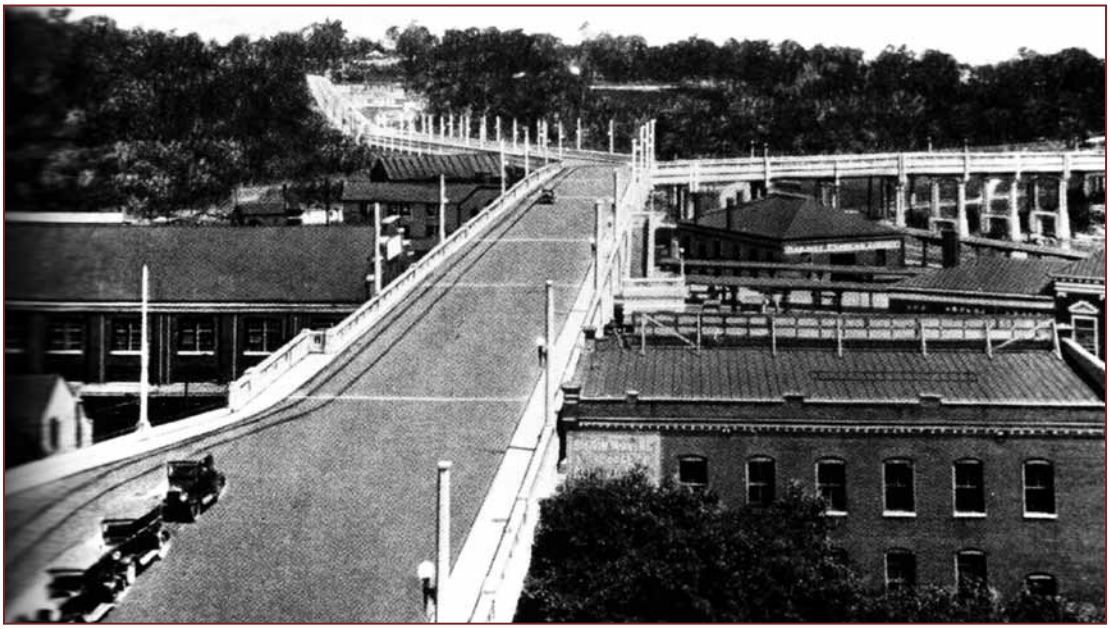
In 1910, the Virginia Railway and Power Company purchased Library Hall, which had been rebuilt in 1878 following a fire that destroyed the original building. It became the depot for the Interurban.

Liberty Hall

All three of the streetcar lines went through numerous reorganizations and their names were changed many times. Each produced its own electricity and as electric light bulbs became popular, they began selling their excess electricity. By 1923, the three companies had merged to form the Virginia Electric and Power Company, now Dominion Power.

The advent of the modern automobile had a devastating impact on streetcars. 1936 was an especially bad year. In May, the State Corporation authorized VEPCO to substitute buses for streetcars in Petersburg. The last two city lines, Washington and Halifax, made their last runs on June 6, 1936. On September 1, 1936, the Richmond and Petersburg Interurban line fell to the same fate. The remaining Richmond streetcars remained in use until November 1946 when they were replaced by buses..

The Electric Building



New Appomattox River Bridge when it opened in 1925.

In 1925, a new Appomattox River Bridge was constructed. It was built of steel-reenforced concrete and had tall piers that resulted in a higher elevation than earlier bridges. This reduced the grade up the steep hill at the Colonial Heights end. The bridge had a dedicated lane for the streetcars. VEPCO constructed a new terminal for the Interurban Street Railroad at the Petersburg end of the bridge.

The first floor served as the terminal. It was connected to the bridge by way of a 20 to 24 foot wide concrete ramp. They streetcar tracks turned off on the ramp where passengers were loaded and unloaded. The tracks continued a couple of hundred feet then turned right on Bollingbrook Street. They ram one block, then turned right on Sycamore Street, then right again on Old Street so that they could be parked in a car barn located behind the building.

Due to the terminal level having to be the same height as the bridge, the building had a very tall foundation. The terminal level is about forty feet above the ground.

The second floor provided space for the VEPCO offices. Even though the streetcar line closed down in 1936, the company continued to use the offices until it constructed a new building around 1955. VEPCO then gave the building to the City of Petersburg.

The Electric Building at night, when it first opened.

In 1989, I purchased an option to buy this building from the City of Petersburg. I spent the next six months researching its history and determining the feasibility of restoring it. At that time, it was called the "VEPCO Building." Among other things, my research resulted in the discovery of the above photograph/ A lighted sign proclaims it to be the "Electric Building." This revealed its original name, which has been used ever since.

The most striking feature of this building is its construction. It was built of steel-reenforced concrete, same as the bridge. Guthrie Smith was then the city's director of engineering and he provided me with copies of the original blueprints. The foundation plan was especially fascinating. The end view shows that the building rests on the fall of the geological plate that covers North America. The drop off of this plate results in the waterfalls on Virginia's rivers. This granite plate is about thirty feet below the ground level on the west (rear) side of the building, but falls a good ten feet between it and the front wall, only thirty feet away.

Three rows of steel-reenforced concrete columns rise from the bedrock. At each floor identical structural members connect them together, both from side to side and from front to rear. The thick concrete floors were poured on that frame. The Electric Building is, by far, the strongest building in the City of Petersburg. Since it sits on a granite plate, the building will never settle. It will last for many centuries unless demolished by man.

The above photograph shows the terminal level. Showcases displayed the newest electrical appliances. Note the heavy columns on the right side of the picture.

In 1989, the terminal level was in excellent condition. Surprisingly, all the light fixtures were still intact. The only apparent damage was to a few floor tiles that could be replaced.

Most amazing of all is that the second floor offices were still intact. The space was partitioned into offices. The partitions consisted of cherry-colored wood wainscoting to a height of around five feet. Around 18 inches of pebble surface glass is mounted above them. This space provides a magnificent view of Old Towne.

The building has large windows on all four sides. This provides a very light and airy feel. Many coats of paint have made them difficult to open and close, but the paint can be stripped off, and the windows easily put back into operation.

There was a very large boiler in the basement that provided hot water to the radiators. Although no longer used, this was an excellent heating system,

The very tall foundation provides more than adequate space for two more floors. In fact, a half floor was located below the terminal that contained passenger bathrooms. They were in very poor condition.

As I recall, the columns are 12.5 feet on center, making the building 25 feet wide and 87.5 feet long. This provides only 2,187.5 square feet per floor.

I retained architect Larry Shefflitt to create measured drawings of the building to show its design to provide a base for variations. Larry was especially well suited for this task as a few years earlier he had renovated Richmond's famous Main Street Station into a downtown shopping mall.

The feasibility study revealed numerous problems. The most obvious was the difficulty in getting into the building from anywhere other than bridge ramp. Modern users would have cars and there was no parking. The city agreed to sell me the vacant lot behind the building, which would solve the latter problem. Access could be overcome through the use of an elevator, but the extremely heavy construction of the building would make one very difficult to install. Worst of all, the elevator shaft would seriously disrupt the light, airy feel of the building and be historically inappropriate. The only viable solution was to build a free-standing elevator shaft at least 20 feet from the building and connect it with walkways. This would be very expensive.

The solid steel-reenforced grid construction also made it extremely difficult to run air conditioning ducts and upgraded electrical service. The large windows would result in a tremendous loss of heat and cooling, and they would require very large custom-made storm windows so that the original windows could still be opened.

The biggest problem was there was no viable use for the building. The difficult accessibility made it grossly unsuitable for retail. The two floors provided a great view of Old Towne and would have provided a great environment for restaurant dining rooms, but the kitchen and bathrooms would have to be on lower levels and this would make operations very difficult.

The renovation was certainly possible, but the high costs could not be justified by such a yield of so little rental space. We considered the possibility of using it as an office building. The amount of rental space could be doubled by installing two more floors within the foundation, but we had to discard that possibility because office usage would require windows to be installed in the foundation; the building is historic and such a drastic exterior change would not be permitted by the federal renovation guidelines, followed by the Petersburg Architectural Review Board. Plus, there was no demand for office space.

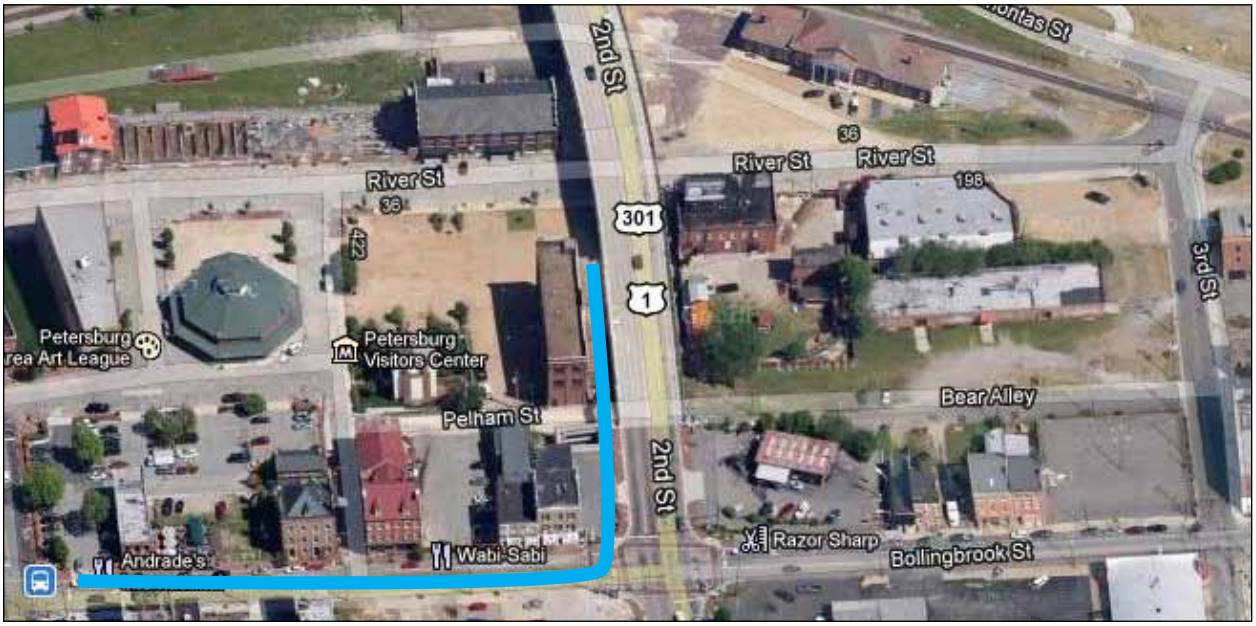
I wanted to renovate this building, but the evidence was overwhelmingly against it. Renovation would be very expensive and their were no possible tenants. I did not exercise the option.

A few years later Mr. William Patton of Virginia First Savings Bank acquired the building. Toward encouraging the renovation, the City of Petersburg constructed a new parking lot behind the building and included it in the transfer. I gave Bill the original VEPCO drawings and all of the ones prepared by Larry Shefflitt, which he still has.

Ecologically the building was a disaster. The area under the ramp had been used for junk storage for many years and the debris was covered with pigeon excrement. There was extensive asbestos in the foundation, especially around the boiler. All of this had to be removed in compliance with strict safety standards. Mr. Patton paid a small fortune to have this work performed. Although he really wanted to help the city by putting this building back into use, he eventually reached the same conclusion that I did. It was not economically viable. He sold it to a company in Utah for little more than his cost.

In conclusion, this building is a white elephant. It has now been vacant for 58 years and no one has ever been able to find an alternate use for it. It has only one suitable use. It should be returned to its original function: that of a streetcar terminal.

Utilizing the Electric Building



Streetcar line from Electric Building to Bollingbrook Street shown in blue

There is a bright side. The Electric Building is perfectly positioned to provide transportation from the Petersburg Parks to downtown Petersburg. The parks' main activity center will be River Street between Union Station and Southside Station.

The original ramp between the Electric Building and the bridge is still in place, but they are no longer connected. It can once again can be used by passengers. The track ran south about two hundred feet and then turned right onto Bollingbrook Street. Mr. Patton owns the building between the two. Some of the original streetcar track was still in place when he installed a new parking lot a few years ago. A brick wall now covers where they were located. The original right of way is most likely still on the books. The track can be reinstalled without disrupting the use of the parking lot.

A free-standing elevator should be installed close to River Street. The granite plate is about thirty feet below the ground level. It will provide a great foundation for the elevator tower. The elevator should be driven by a telescoping hydraulic ram. The elevator car should be unique and of a historically appropriate design. I recommend that the tower be a steel girder frame with glass curtain walls. The actual car should have a Victorian-style frame and glass walls. The elevator tower should be connected to the Electric Building by overhead walkways. All of this makes it visually interesting and inviting. The elevator, tower and walkway will probably cost in the area of $500,000.

The second floor of the Electric Building should eventually house the Petersburg Parks offices. The location is ideal because it permits them to be accessed without having to enter the parks proper. Employees and visitors would park in the new lot behind the building and would use the elevator to enter. This permits the wonderful original interior to be retained intact.

The boiler should be replaced and the radiators put back into use. Air conditioning can be provided to the offices by placing the outside unit on the roof. This avoids the problem caused by the structural members.

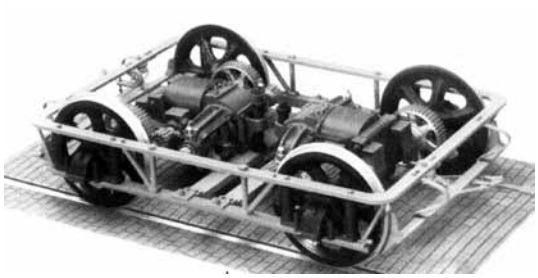
The terminal level would not be air conditioned. Instead, the original environment would be restored. Opening the many windows would provide an abundance of fresh air and great cross ventilation. This accurately captures the atmosphere and experience of the time, which is historically appropriate.

The Electric Building is very dirty. In 1989, I had several test patches steam cleaned and those areas sparkled like new. Within a few years soot had once again soaked into the porous white limestone trim. (If you look carefully you can see the test patches.) The building should be steam cleaned and the limestone sealed to maintain the white appearance. This would transform a dark, ugly building into “like new” condition. It will once more become alive.

At some later date, two more floors can be installed in the foundation. One of them can be used to house a streetcar museum.

Streetcar Technology

Trolley Pole



Model of Sprague Trucks

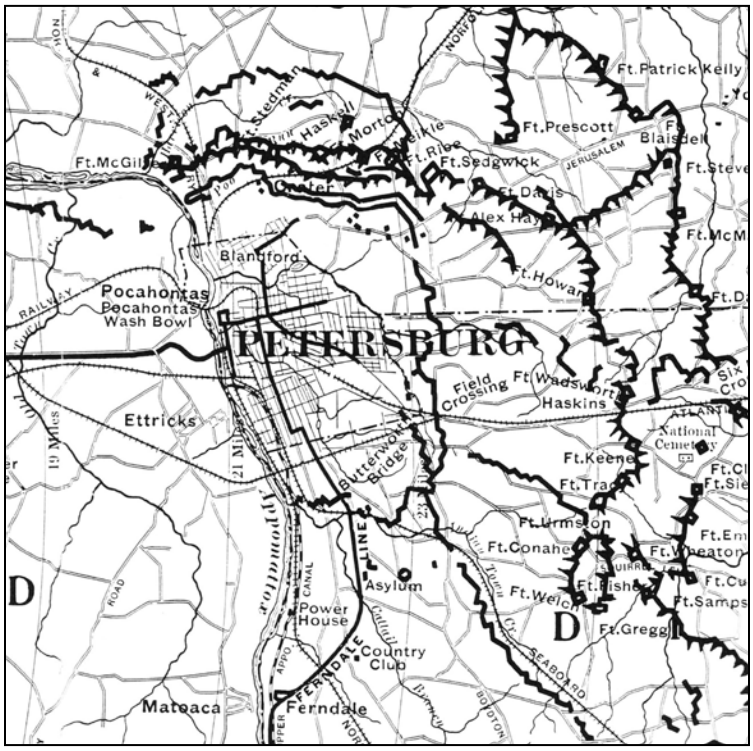
The technology is fairly simple. A spring-loaded trolley pole obtains electricity from an overhead wire. It passes through a device that permits the operator to control the flow, and then it goes to the electric motors mounted in the wheel trucks.

My 1989 research led to discovering the last remaining Petersburg streetcar. It had been abandoned in a field in Amelia County, where it had been used for living quarters during the depression. I purchased that streetcar and returned it to the city. It is now stored under the Electric Building ramp next to the Martin Luther King Bridge. It is far too deteriorated to permit restoration, but it can be used to prepare measured drawings for a reconstruction .

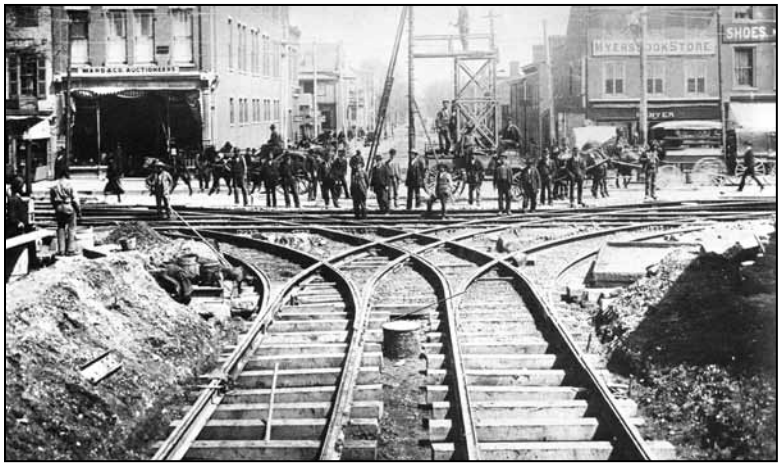
The Petersburg Parks service center can rebuilt the actual cars. The motor driven trucks will have to be purchased. At least one company still makes them.

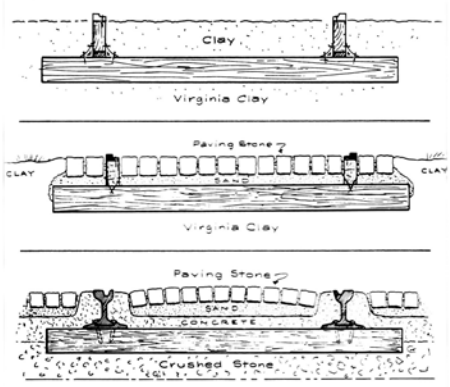
All streetcars used a trolly pole that obtained power from overhead wires. The City of Petersburg has had all of the power poles removed from Sycamore Street. This rid the street of a big eyesore, but also removed the means to power the streetcars. However is not important. During the last few years small, powerful, long-lasting batteries have been developed for automobiles. One or more of these can be used to power the streetcars.

Tracks



This map of the Petersburg streetcar routes is a little confusing as it is turned so that north and south are sideways instead of up and down. The Interurban line enters from the left edge. The Ferndale Park branch goes off the bottom of the map.





Streetcar tracks were laid in the same way as railroad tracks. Steel rails were spiked to wood ties. These were below the street level. The cavity was filled so that the top of the tracks were flush with the street. This prevented people from tripping on them.

The Petersburg streetcars ran on the same standard gauge track as the steam railroad. A short section of track can be installed between Sycamore and River Streets, permitting the streetcars to be stored and maintained in the Petersburg Parks service building. (See *Update 1*).

Early 20th century postcards show that the streetcars had two pair of tracks. This permitted two-way traffic.

I suspected that the original streetcar rails were still in place, as it would have been unnecessary and expensive to remove them when Sycamore Street was paved with asphalt. I asked the City of Petersburg utility department about this. It's representative confirmed that all of the track was still in place, other than short sections that had been removed in the process of installing new water and sewer lines.

Heritage Lines

Dallas

Memphis

New Orleans

Several American cities have installed heritage streetcar lines. They provide transportation and are tourist attractions.

Richmond, Texas Streetcar Flyer

In the course of researching the Petersburg and Richmond streetcars on the Internet, I ran across this flyer published by residents and businessmen of Richmond, Texas. It calls for a modern streetcar line. All of the arguments it presents are valid.

We want neighborhood-friendly light rail on Richmond.

We want stations we can walk or bike to from our homes.
A study in Dallas found that the values of homes near light rail stations increased 50% more than the values of homes elsewhere

We want connections from our neighborhoods to Downtown, Greenway Plaza, Uptown, the University of Houston, Midtown, and the Medical Center.
These activity centers account for more than 390,000 jobs and 97,000 students.

We want people to be able to ride the train to our shops, restaurants, churches, and museums.
The Salt Lake City Downtown Merchants Association gave the TRAX light rail system its "Friend of the Retailer" award for bringing more customers.

We want accessible transit for the elderly, the young, the disabled, and the poor.
1 in 5 adult Texans cannot drive. Frequent, convenient, and accessible transit service opens opportunities.

We want an attractive pedestrian-friendly avenue.
There are more trees, safer wider sidewalks, and better lighting on Main Street now than there were before rail was built.

We want people, not parking lots.
There are thousands of new housing units coming to Richmond. Do we want those people clogging traffic or riding trains?

We want high-quality transit for our urban neighborhoods, not just for the suburbs.
Metro has spent more than a billion dollars and 20 years building high-quality commuter bus service to Kingwood, Katy, Spring, Clear Lake, CyFair, and Southwest Houston.

We know Houstonians will ride rail if it goes where people want to go.
The Main Street light rail line counts more than 40,000 boardings on an average weekday -- that's more riders per mile than any other modern light rail system in the United States.

Make your voice heard! Sign a petition of support at richmondrail.org.

Tourist Trolley Alternative

A tourist trolley, also called a road trolley, is a rubber-tired bus, which is made to resemble an old-style streetcar. The name refers to the American English usage of the word trolley to mean an electric streetcar. As these vehicles are not actually trolleys, and to avoid confusion with trolley buses, the American Public Transportation Association (APTA) refers to them as "trolley-replica buses"

They offer many advantages over reconstructing a historic streetcar. Since they do not require tracks, they can go anywhere. Passengers could board at Union Station and the trolly could visit not only Sycamore Street, but the Siege Museum and Centre Hill Mansion.

The big disadvantage is their function is limited to providing transportation. A great many people will visit the Petersburg Parks to ride the trains. Most will also want to go for a ride in a historic streetcar. A tourist trolly will not have the drawing power of a historic attraction and will probably result in far less traffic. It also violates the park policy of everything being historically appropriate.

A tourist trolly may not be an option. The above American heritage trolley bus was made by the Chase Company, which became Optima and later the American Bus Company. The product is not shown on its website, suggesting that it has been discontinued, but there may be other companies who make them.

Operation

The streetcars or tourist trolly should be owned and operated by the Petersburg Bus Company because it is responsible for local transportation. The Petersburg Parks should own the Electric Building, as it will house its offices. It should make the terminal available to the bus company.

Recommendations

The Petersburg Electric Railroad and the Electric Building terminal are separate and distinct issues, but they are closely interrelated. Each is individually discussed.

The Electric Building

The Electric Building is a dark, dirty, shell that has been vacant for 58 years. It needs to be brought back to life as it will considerably improve the appearance of Old Towne, River Street and the entrance into the Petersburg Parks.

Mr. Patton sold it to the Utah Company for $250,000. He talked with its people last year to determine if they would be interested in selling it back to him. They replied that they had put so much money into the building that they could never get their cost back. To Mr. Patton's knowledge, they had not invested a dime in the building. As there is no possible use for this building, the Utah company would be smart to accept a $300,000 offer.

The building could be utilized in three different ways.

1. Petersburg Parks Offices

A limited renovation would permit the Petersburg Parks to use the second floor for its offices. This would consist of installing a modern new boiler for the existing radiator heating system, air conditioning, cleaning the building, upgrading the electrical system and completely remodeling the bathrooms. The roof is a concrete slab and should be in excellent condition.

In constructing the Appomattox River Bridge, VDOT installed a staircase on the south side of the building that runs from ground to bridge level. Employees can use it, so no elevator would be required. My guess is that this limited renovation would not cost more than $125,000.

If nothing else, this should be done.

2. Streetcar Terminal

The big cost will be the $500,000 free-standing elevator to permit easy and inviting access from River Street. The public bathrooms must be enlarged and tracks constructed from the ramp to Bollingbrook Street.

The free-standing elevator will be expensive, but the cost can be justified by enticing a great may people to ride the streetcar up Sycamore Street, as that will provide an enormous boost tot he city's retail economy.

3. Streetcar Museum

If the streetcars are not put back into service, then at some later date a reconstructed, non-functional antique streetcar should be displayed on the outside ramp and the terminal level should be used for a streetcar museum. Maintaining artifacts will require a controlled environment, which means insulating the windows and installing air conditioning.

Using the building for only a museum does not justify the cost of the elevator. The steps installed by VDOT are on the far side of the building and cannot be seen from River Street, so no one would know they were there. To overcome this, a new metal staircase should be installed on the wall closest to River Street.

Streetcars

Putting streetcars back into operation should certainly be explored. The biggest single cost will be the track. The line should be surveyed. Metal detectors can be used to determine where the track still exists and where it has been removed. In the normal course of digging water and sewer lines, some track will be exposed. It should be closely examined and photographed to determine the condition of the wood ties and the track. All of this can be done at very little cost.

The purpose of all this is to find out exactly what will be required to restore the track. If it will only require removing the asphalt that covers the rail and replacing a dozen or so sections of missing track, then the cost will probably not be great. If the wood ties are seriously deteriorated, then the cost of replacing everything can result in prohibitive costs. The fact that there were two pair of tracks means that they went both ways. Many streetcars went in both directions. The driver just moved from one of the streetcar to the other. Using such a design, no turning circle would be required, just a switch to move from one track to the other. The economic viability needs to be determined before anything else.

If the track survey is favorable, then the streetcar technology should be developed. Over the years the Petersburg Electric Railroad (under its various names) owned 54 streetcars. Twelve different models were used, made by six different companies. The most widely used were the fourteen nine-bench cars ordered in 1899 from J&S. They were numbered 602 to 628. Number 602 is shown on page 4 and on the cover.

The various models should be researched to determine which one to reconstruct, as it may be better to go with a larger car due to larger seating capacity. A mechanical engineer should prepare measured drawings. By this time, the Petersburg Parks will be quite skilled at building locomotives (see *Update 1*), so it can build the streetcars. The electric trucks should be purchased. The parks should construct the frame. Its function is to support the trucks and batteries to get everything to work. Since the streetcars used standard gauge track, this prototype can be tested on the inner loop. If trucks cannot be obtained, then the use of other power sources should be explored.

Testing of the prototype will almost surely result in some changes. Once the technology is finalized, then the streetcar body can built and mounted on the frame. That's the easy part.

Economics

Purchasing and restoring the Electric Building offices as described above will probably cost about $425,000. It will probably cost another $100,000 to make it suitable for use as a museum. A non-functional streetcar for exhibit will probably run another $100,000.

If the building is used as the streetcar terminal, then the elevator tower will add $500,000 to the renovation cost. New bathrooms will also be required.

The Petersburg Parks can probably build two streetcars for $200,000 each. If the track can be restored for $500,000, the total cost would be $2,500,000.

This plan does not commit to all of that at one time. It is faithful to the principal of maximizing potential while minimizing risk, as it takes things a step at a time. Again, at the very least the Electric Building should be purchased and renovated for use as park offices.

Upon completion of Phase 4, the Petersburg Parks are expected to attract 800,000 visitors per year. (See *Financial Consideration*). If 25% of the visitors ride the streetcar and pay a $3.00 round-trip fare, then that's $600,000 in income. That will more than pay the debt service and operating expenses of everything. It will also yield a substantial profit.

However, if the Petersburg Parks are generating the high profits that are anticipated, then they should be reinvested into the city. The parks should thus pay for the Electric Building, its renovation and the streetcar line. The parks would treat the streetcar as another attraction. There would be no additional fare. This may result in a substantial increase in customer traffic. Far more people will go up Sycamore Street and that is the entire purpose of this plan.