OPERATION BOOTSTRAP

Reconstruction and Renovation of Southside Station

By Marv Broyhill
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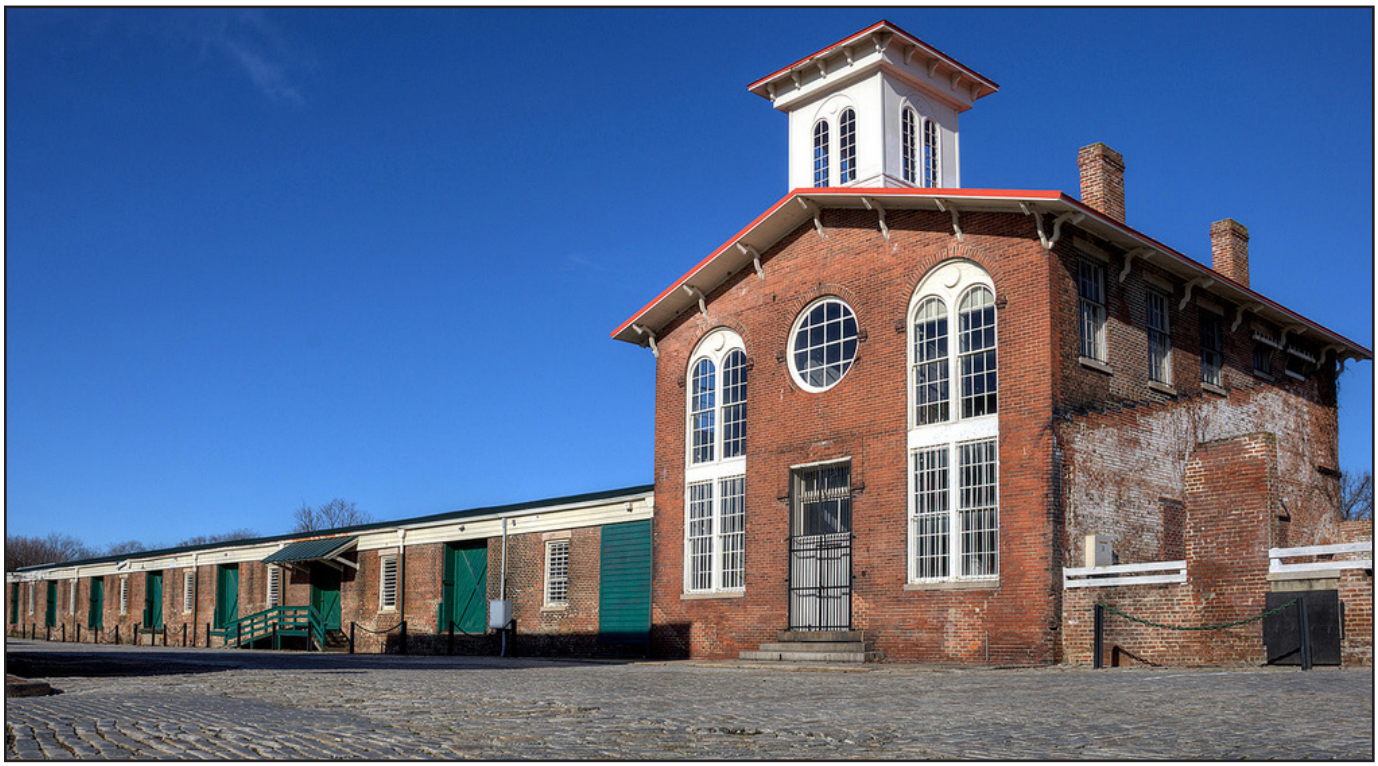


Southside Station is an extremely important historic building. The American Civil War was the first in history to see the extensive use of railroads. Southside Station is the only surviving pre-Civil War train station in the entire South. It is a one-of-a-kind resource and it plays an important role in the Operation Bootstrap business plan.

Southside Station contains three sections. A two-story building is in the center. The first floor was the passenger depot and the railroad offices were on the second floor. It is flanked by one-story freight station wings. The great tornado of August 6, 1993 was the most powerful ever recorded in Virginia. It largely destroyed the east wing. It is located immediately adjacent to the main entrance to the proposed American Adventures historic theme parks complex. Its appearance suggests a depressed city, which is not the image that we want to convey to visitors. This condition should certainly be corrected, but equally, if not more important, is that the National Park Service wants to use this building to house a Central Virginia Civil War Museum. It is expected to attract a quarter-million people a year into the city.

The biggest single expense in Phase I of Operation Bootstrap is the reconstruction of the east wing. This report identifies the issues that must be addressed by the reconstruction and the needed renovations.

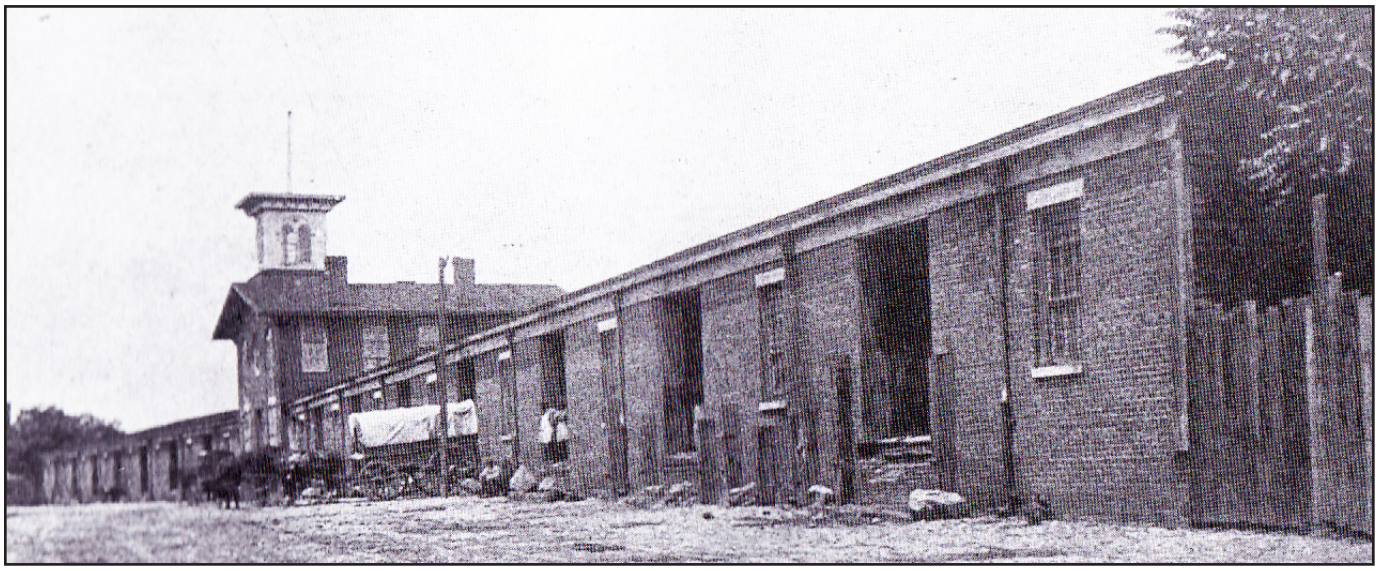
Future Use

The National Park Service has long wanted to use the west wing of Southside Station for a Central Virginia Civil War Museum, but was unable to obtain the necessary federal appropriations. As such usage will be a major draw in its own right, Operation Bootstrap calls for the Petersburg Parks to provide the facility to the Park Service rent free. The Park Service will undoubtedly want to preserve the historic interior, but museum use will require essential improvements, such as heat, air conditioning, a new electrical system, basic lighting and public bathrooms. These improvements will be provided by the Petersburg Parks. The park service can do its own bootstrapping by starting off on a small scale and then expanding as existing budgets permit. For example, it can open with two bays and open additional bays at the rate of one every year or two.

The report "Battle of Petersburg" describes the United States Military Railroad that supported the Union troops during the battle. If that railroad existed today, then its logistics function would almost surely result in it being assigned to the Quartermaster Corps. It is headquartered at nearby Fort Lee, which is home to the U.S. Army Quartermaster Museum. The U.S. Army Transportation Museum is at Fort Eustis, about 70 miles southeast of Petersburg. One or both may want to contribute exhibits to the Civil War Museum. That should only be permitted with the permission of the National Park Service.

The funds requested by the Park Service did not allow for reconstructing the east wing. In fact, Park Service regulations virtually preclude the reconstruction of historic structures. The reconstruction of the west wing must be done by the Petersburg Parks.

First and foremost, Operation Bootstrap is an economic development plan. The report "Fostering Economic Revitalization" explains how the reconstructed east wing can serve as an incubator to help new retail businesses get started. Once well established, they will hopefully relocate to larger facilities within the city, thus helping to restore the Sycamore Street shopping area back to prosperity.



Information Limitations

Among other things, this report identifies the issues that must be addressed in the reconstruction of the east wing and improvements to both it and the west wing. The goal is to establish a realistic budget.

These efforts are severely hampered by lack of information. There are no known architectural drawings of Southside Station and only the outside of the building has been available for physical inspection. In 1993, Mr. William Patton owned the building and converted it into a flea market which was extremely successful. It was destroyed by the tornado. However, both Mr. Patton and his contractor, Gibbon Sloan, are intimately familiar with the building and have provided information about it. Dulaney Ward is the city's foremost architectural historian. He identified several unique features of the building. Between 1987 and 1993, this author renovated 18 buildings in Old Towne that were constructed between 1810 and 1816. Some required extensive structural work so he is intimately familiar with how they built. There were no new building materials introduced between 1816 and 1854 so structures and construction techniques did not change.

Due to the lack of architectural drawings exact measurements are not available. This author paced off the most western bay and found it was 21 paces deep and 13 paces wide. A pace is 30 inches, so each bay measures approximately 52 feet deep by 32 feet wide. This yields 1,664 square feet. Since each wing contains seven bays they each contain around 11,648 square feet.

Basic Structure

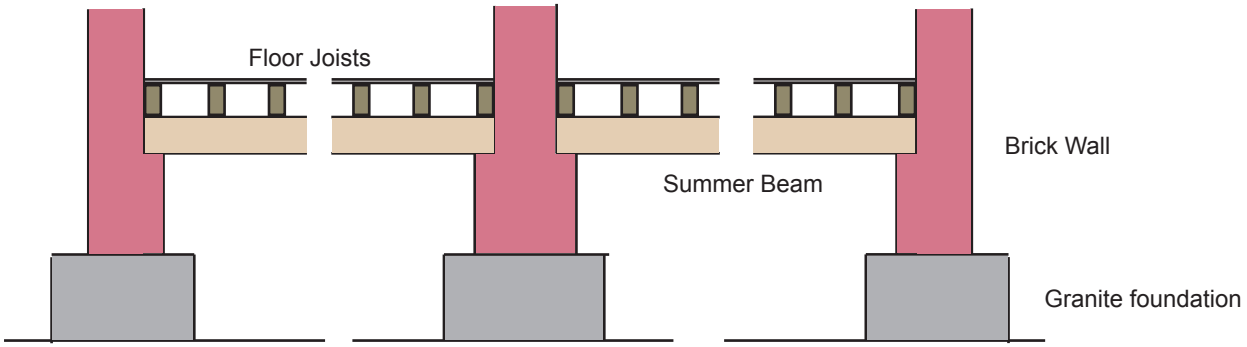
The Great Fire of 1815 destroyed almost all of Petersburg. Richmond newspapers reported that the flames could be seen from there and all but a dozen buildings were destroyed. In the late 1860s, the Progress Index published a series of reminiscences an Old Timer who wrote that in the year following the fire, over 600 new buildings were constructed, "but scarcely a one since then."

Downtown Petersburg is divided into lots that are 24 to 25 feet wide. That determined the width of the buildings. All of the ones renovated by the author on Old and Bank Streets were 42 feet deep. This depth was determined by the structure. They have a very thick foundation made from granite rocks that most likely came from the nearby Appomattox River. This foundation sits on bedrock. The brick walls sit on this foundation.

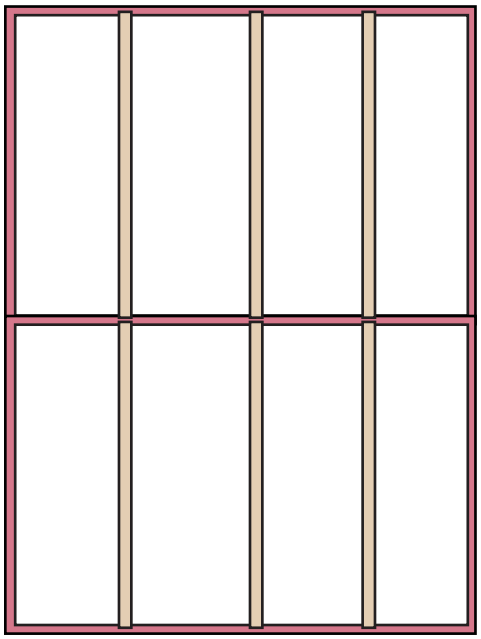
These buildings are often described as being 3 1/2 stories. The half story comes from the very high roof, which provides attic space large enough to accommodate two large rooms.

At the foundation, the brick is six courses wide. When the first floor level is reached, the inner course is eliminated. This provides a shelf or ledge to support "summer beams," which run from one side of the building to the other. There are three of these beams on each floor, which divides the length of the building into four sections. When the second floor level is reached, another course of brick is eliminated to provide support for the next set of beams. This continues to the fourth floor (attic), which is only two courses of brick thick.

Most of the buildings in Old Towne were constructed as "double buildings." For all practical purposes, they were two separate buildings, but they shared a common center wall to reduce construction costs.



Double building structure cross section



Double building structure from above

The 52 foot depth of the freight station wings was almost surely determined by the construction materials then available. Summer beams were 8" wide and 12" tall. They could not carry substantial weight for more than 25 feet. That limited their length.

I have not had access to the area under the floor of the existing west wing, so have not been able to examine it, but the 52 foot depth is that which would result from two summer beams laid end to end, supported by a knee wall that rose to floor level. This is the exact same construction used in the double buildings.

It would seem that each bay of Southside station would have been constructed just like a double building. Thus each bay has six summer beams, each around 25 feet long. Although this sounds great it theory, it is contradicted by the easily visible foundation of the destroyed east bay.

East wing foundation

The east wing has brick walls running most of the way across it. They are spaced about 10 feet apart. Interestingly, they do not run the full width of the building, as they stop about ten feet short of the south wall.

Mr. Sloan maintains that they are the foundation of a row of earlier buildings. Dulaney Ward says that there were buildings on this site prior to the construction of Southside Station, but none are known to have been in the area covered by the existing west wing. If this is the case, then the foundation of the west wing is probably similar to that set forth on the preceding page and the foundation of the east wing utilized the earlier brick foundations. Once they were covered with floors, then no one would ever be able to tell the difference.

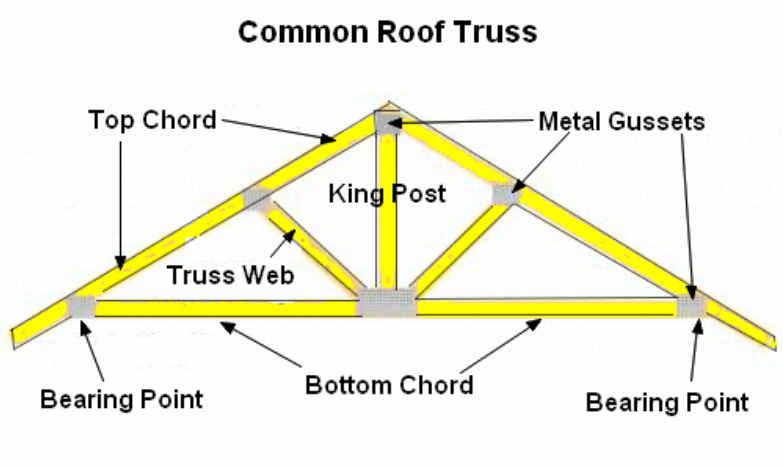
The ten foot gap between the original brick front wall and the Southside Station front wall was covered by a 12" x 12" wood beam. Strong 4" x 8" floor joists were run across the brick walls, just as they would have run across summer beams. The floor was designed to carry heavy weight. The boards are 12" wide and 2" thick.

Another view

Brick

The brick on the exterior walls is very deep red in color and has a glazed surface. This identifies it as fired brick, seasoned in a kiln. The inside brick walls are a much lighter color. This is because they are made of salmon brick, the name resulting from their color. These bricks have not been fired and are relatively soft. Although they will hold a great deal of weight, they do not provide the protection against the elements provided by fired brick. Such brick was often used in locations not subject to rain and snow, as they cost far less than fired brick.

Roof Design



All of the existing federal period buildings in Old Towne originally had gabled roofs made of common roof trusses. The term "gable" refers to the outside wall.

Rear view of west wing around 1864.

The freight station wings of Southside Station have a shed roof, one that is high on one end and runs downhill to the other. This is a radical departure from other Old Towne buildings. Dulaney and Ward and I have discussed the reasoning behind it. We concluded that a gable design would result in rain and snow covering the train tracks. The shed design directed it to the street side of the building.

Rear view of west wing today.

The above photograph is the only one of Southside Station in the extensive Library of Congress collection. It shows that the brick walls rose to the same height on both the side and end walls. The gable and the space between the brick wall and the roof peak were covered with wood.

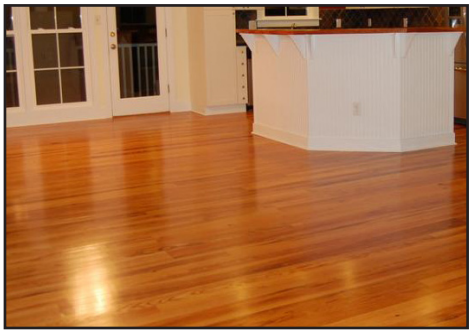
At some later date, the wood siding above the brick was replaced with corrugated metal, which is now very rusty. One section of it was replaced with modern siding. There have been two conspicuous additions. The Civil War era pictures show that the railroad tracks were located so that the freight cars were but inches from the door. Today there is a long deck that runs the length of the entire building. Also, a roof has been erected over it. This almost surely resulted from moving the track several feet away from the building.

Heart Pine

All of the buildings in Old Towne are constructed of heart pine. The term refers to the heartwood of the Longleaf Pine, *Pinus palustris.* It is the non-living center of the tree trunk; the sapwood is the outer living layer which transports nutrients.

Longleaf Pine once covered 30-60 million acres of the southeast United States coast. These trees grew very slowly and 30 years of growth added but an inch to the diameter. The original growth trees were often 400 to 500 years old and were often 150 feet tall and four feet in diameter. The very tight grain made heart pine as strong as oak, but it was much easier to work. It was extensively used for structural beams, pilings, posts, flooring and other things. Due to deforestation and over-harvesting less than 3% of the original Longleaf Pine forest remain and they are devoid of the huge original growth trees. There have been reports of a few surviving ones, but for all practical purposes, they are extinct.

Old heart pine beams



Heart pine flooring made from beams

Heart pine is a beautiful wood. It has an extremely tight grain. When first cut, it is pinkish, but the growth rings are a contrasting red. This wood darkens with age. If used for structural purposes, the outside turns a very dark brown, almost black. There is a large secondary market for heart pine beams. There are a number of companies that purchase them from old buildings being demolished, then plank it for flooring. When sanded and coated, it results in a beautiful and highly distinctive golden-colored floor that gradually darkens with age.

Restoration Standards

The National Park Service has established renovation guidelines. They have been adopted by the City of Petersburg and renovations and restorations of historic buildings must be reviewed by the Architectural River Board to ensure that the guidelines have been met. This is a precondition for obtaining a building permit. These standards only apply to the exterior of the building.

The guidelines recognize that reconstructions and additions are sometime necessary. In such cases, the new construction must be compatible with, but distinctly different from the original construction. This is well demonstrated by the Charles Leonard Building on Bank Street. Lena Witt renovated it and leased it to District 19. Both customer convenience and the Americans with Disabilities Act required elevator access. Due to its structural design, it would have been difficult and expensive to install one within the building, so it was housed in a new elevator shaft added to the west wall next to the parking lot. It was made of different materials and has large glass windows. Even a casual glance reveals that it is not part of the original structure.

Leonard Building

In 1992, I renovated the 1816 James Knox Building at 23-25 Old Street. It had been subjected to many earlier renovations that had resulted in structural weaknesses. In order to save the building from collapse, the brick on the first floor was replaced. The “historic brick” was almost identical in color, but wider mortar joints were used to show the difference between the original brick on the upper floors and the new brick on the first floor. This situation is virtually identical to that of Southside Station.

James Knox Building

Detail of brick

Overall Design

The central depot is entered at street level. Steps inside lead up to the old freight platform that runs the entire length of the building. If this were not already in place, then the Operation Bootstrap plan would call for it, as this platform overlooks the Equestrian Heritage theme park, described later in this report.

The passenger depot should be restored to its original appearance. This will require the addition of ticket counters and benches for customers. A way needs to be found for visitors to view it without entering it. Possibilities include cutting a window in the inner freight station walls.

The passenger depot and the two freight station wings should each have their own entrance. They should be on the bay closest to the passenger depot and should match in design. The original freight station doors are far too heavy to permit easy access, so more modern doors should be used. They can be located within a glass curtain wall, which easily identifies itself as not being original to the buildings. Visitors can go from one freight wing to the other by using the exterior platform.

Each of the freight station wings should have public bathrooms, which should be located in the bay closest to the passenger depot. Provision must be made for office space. The National Park Service may want to use the second floor of the passenger depot for this purpose.

Renovating the Existing West Wing

From the outside, it appears that the west wing is structurally sound. Heart pine will last virtually forever provided it is kept dry. The summer beams that provide the structure for the floor are at least two feet above grade level and there are a few vents. However they need to be carefully inspected to ensure that they have not been damaged by moisture. If so, repairs should be made as necessary. The same applies to the roof.

It is assumed that this wing will be occupied by the National Park Service and used to house the proposed Central Virginia Civil War Museum. This use demands minimal disruption to the historic appearance. The brick walls and the enormous roof trusses should be left exposed. Although park service renovation guidelines do not apply to building interiors, maintaining the historic appearance can results in tax credits that can be sold.

The subject of cleanliness should be addressed. Should the brick walls be steam cleaned to get rid of a century and a half of soot deposited by the steam locomotives? Some purists will argue that the soot is part of the historic fabric and should be preserved. The wood floor should be well cleaned to remove dirt. It is tempting to suggest sanding the refinishing the heart pine floor, but such an appearance would be out of place in a railroad freight station.

The biggest problem with restoring any historic building is maintaining historic integrity while providing for the needs of modern visitors. They demand modern bathrooms. The museum must have modern heating and air conditioning systems, overall lighting, and ample electrical service to permit the individual lighting of the many different exhibits.

The thick brick walls provide adequate insulation, but the roof provides little. It ranges from 12 to 25 feet above the floor. The possibility of inserting a vapor barrier and a thin sheet of foam insulation between the trusses and covering it to match the underside of the roof should be explored. This can substantially reduce utility costs.

The best way and perhaps only way to provide HVAC is run industrial style round ducts above the bottom member of the trusses. Ducts will direct the air downward. These ducts can be painted an appropriate color. If handled properly, this can be an interesting design feature.

There were no electric lights in 1854, so some way must be found to light the interior. One possibility is to insert modern curtain walls in the freight door openings, but this would result in excess light that would distract from the exhibits. It would be better to hang early 20th century style industrial light fixtures from the trusses. Showcases and exhibits can be individually lit. The electrical supply system should run below the floor as this will permit outlets for exhibits to placed almost anywhere.

Reconstructing the East Wing

This wing is to house small retail stores owned and operated by local merchants. As mentioned earlier, this wing is to function as an incubator that provides a low cost way for them to get started. Hopefully their business will expand and later need more space. This can help to rent the many empty buildings on Sycamore Street. For all practical purposes this is an all new building, which provides opportunities not possible with the existing west wing.

The first step is the removal of the debris that covers much of the foundation. Then the brick foundation must be repaired. Special care must be taken to ensure that all walls are the exact same height in order to ensure a level floor. 12” x 12” wood beams spanned the front ten feet of the foundation. Phase I of Operation Bootstrap includes demolishing most of the wood lumber storage buildings on the former Roper Lumber lot. These are constructed of steel I-beams. They should be recycled and used in place of the earlier wood beams.

In restoring the east wing of Southside Station hand made “historic” brick should be used for the exterior course that comes as close as possible to matching the color of the original brick on the exterior. Due to the color variations in the original brick, the many repairs made over the years (many with modern cement) and remnants of paint, this new construction will be distinctly different from the original. A suitable historic mortar should be used. This wing will have interior wall so the two inner courses of brook can be replaced by cinder block which is far,less expensive than reproduction historic brick.

The new roof trusses will be hidden by a drop ceiling, so they can be made of prefabricated steel or composite wood. Heating and air conditioning ducts should run above the ceiling. The drop ceiling can provide a great many lighting possibilities such as track lighting.

The interior walls should be covered with fireproof 2” x 4” stamped steel studs. Electrical lines should be run through these walls so that dealers have an abundance of outlets. Insulation should be installed between the studs and they should be covered with wood.

A historic atmosphere can be created by using tin ceiling plates in the drop ceiling and installing a beautifully finished heart pine floor. The report “Fostering Economic Revitalization” calls for the Petersburg Parks to construct counters and shelves based on historic designs. They would be rented to dealers, thus relieving a new business of a major startup cost. Of course, dealers could also provide their own historic showcases, shelves and cabinets. For operational details, see that report.

Budget

The biggest cost will be reconstructing the east wing. Reliable sources state the cost of constructing a modern cinder block building with a brick facing runs in the area of $80 per square foot. This figure is for the structure / shell and does not include interior improvements.

In the present situation, the site has already been excavated and the foundation is in place which reduces the cost. However the foundation brick must be repaired. The wood floor joists and plywood sub floor will probably cost about the same as a steel-reenforced concrete slab. The cost of the roof will be the same. Overall, actual costs should run close to or less than the $80 figure.

The seven bays of the destroyed east wing contains 11,468 square feet, which when rounded up to 11,500 square feet results in an "guesstimated" cost of $920,000. The corrugated metal and modern siding on the west bay should be replaced with wood. Insulation should be added to roof. Such repairs should not cost more than $300,000, bringing the structural cost up to $1.2 million. This puts the shell in place.

There will be additional costs for the interior. Under the bootstrapping plan, each wing could begin operation with only two bays. Both will need public bathrooms. The new east bay may contain a snack bar. The historic west bays require very little in the way of interior improvements. There may be other things required, so the interior renovation of the first two bays of each wing (total of four bays) is budgeted at $300,000 plus another $100,000 for the snack bar. This results in a total startup budget of $1.6 million.

Additional bays can be opened up as needed. They will cost much less as the big cost of bathrooms has already been paid. The west wing bay will only require HVAC, electrical and lighting. This should be budgeted at $50,000 per bay. If the east wing does have tin plate ceiling panels, heart pine floors, and extensive lighting, then each bay should be budgeted at $80,000.

The above cited figures reflect direct cost - that which will be incurred by the general contractor. It is recommended that the Petersburg Parks function as the general contractor, as contracting the work out to one will increase the cost by at least 25%, perhaps far more.

Conclusion

The destroyed east freight station wing can be rebuilt, the existing west bay repaired and upgraded and two bays can be opened up in each wing for a total "guesstimated" cost of $1.6 million. More detailed figures cannot be obtained until architectural drawing are in place cost and detailed specifications prepared. It is customary to add a contingency budget to provide for unforeseen expenses. In this case, it should be at least 20%, which adds $320,000 for a total budget of $1.92 million, which can be rounded off to an even $2 million.

The biggest unknown is the condition of the west wing floor. An extensive reconstruction will use a large part of the contingency budget and the Park Service may want things not provided for above. In this case, the contingency budget will probably be used. If not, then that's money saved.

But even if total cost is $2 million, then that is still cheap in view of the enormous economic impact that this can have on the City of Petersburg.